

**FAKTOR-FAKTOR YANG MEMPENGARUHI TINGKAT
KEPATUHAN MASYARAKAT DALAM MEMATUHI
PROTOKOL KESEHATAN
DI MASA PANDEMIC COVID-19
*LITERATUR REVIEW***

SKRIPSI



**Oleh :
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NIM.17010017**

**PROGRAM STUDI ILMU KEPERAWATAN
FAKULTAS ILMU KESEHATAN
UNIVERSITAS dr. SOEBANDI (UDS)
2021**

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Untuk Memenuhi Persyaratan
Memperoleh Gelar S1 Ilmu Keperawatan



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HALAMAN PERSEMBAHAN

Alhamdulillah, segala puji Allah SWT dengan kemurahan dan ridho-Nya, *literature review* ini dapat ditulis dengan baik dan lancar hingga selesai. *literature review* ini saya persembahkan kepada:

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MOTTO

“Jangan menjelaskan dirimu kepada siapapun, karena yang menyukaimu tidak butuh itu, dan yang membencimu tidak percaya itu”

(Ali bin Abi Thalib)

Buku adalah jendela dunia

“ Cerdas dalam berfikir , Cermat dalam Bertindak ”

(Ivtitahul Hidayati)

LEMBAR PERSETUJUAN

Penelitian ini telah diperiksa oleh pembimbing dan telah disetujui untuk mengikuti seminar hasil pada Program Studi Ilmu Keperawatan Universitas dr. Soebandi Jember

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Menyatakan dengan sesungguhnya bahwa *Literatur Review* ini yang berjudul: faktor-faktor yang mempengaruhi tingkat kepatuhan masyarakat dalam mematuhi protokol kesehatan di masa Pandemic Covid-19, adalah karya sendiri dan belum pernah diajukan untuk memperoleh gelar kesarjanaan suatu perguruan tinggi manapun. Adapun bagian-bagian tertentu dalam penyusunan *Literatur Review* ini yang dikutip dari hasil karya orang lain telah dituliskan sumbernya secara jelas sesuai dengan norma, kaidah dan etika penulisan ilmiah.

Apabila kemudian hari ditemukan adanya kecurangan dalam penyusunan *Literatur Review* ini, saya bersedia menerima sanksi sesuai dengan peraturan perundang-undangan yang berlaku.

Jember, 25 Agustus 2021



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SKRIPSI

**FAKTOR-FAKTOR YANG MEMPENGARUHI TINGKAT
KEPATUHAN MASYARAKAT DALAM MEMATUHI
PROTOKOL KESEHATAN DI MASA PANDEMIC COVID-19**

LITERATURE REVIEW

**Oleh :
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ABSTRAK

Hidayati, Ivtitahul*, Subiastutik, Eni **, Yuhbaba, Zidni Nuris *** 2021.
Literatur Review faktor-faktor yang mempengaruhi tingkat kepatuhan masyarakat dalam mematuhi protokol kesehatan di masa Pandemic Covid-19. Skripsi. Program Studi Ilmu Keperawatan Universitas dr. Soebandi Jember

Penyakit COVID-19 adalah penyakit yang disebabkan oleh SARS-CoV-2 (*severe acute respiratory syndrome coronavirus 2*). Prevalensi di dunia penyebaran virus corona per bulan Januari 2021 tercatat 103 juta kasus dengan angka kesembuhan 57,3 juta dan angka kematian 2,22 juta. Prevalensi di Indonesia masuk dalam posisi 19 besar negara dengan kasus terbanyak dengan jumlah 1,1 juta kasus dan angka kesembuhan 897.000 serta dengan angka kematian 30.581. Hal tersebut diperlukan tindak lanjut yang bersifat segera. Meskipun pemerintah telah banyak mempromosikan protokol kesehatan kepada masyarakat, masih banyak masyarakat yang tidak patuh terhadap protokol kesehatan baik menggunakan masker, mencuci tangan dan menjaga jarak. Tujuan mengetahui faktor-faktor yang mempengaruhi tingkat kepatuhan masyarakat dalam mematuhi protokol kesehatan di masa Pandemic Covid-19. desain penelitian *literature review*. Pencarian artikel menggunakan database seperti *Google Scholar, Proquest dan PubMed*, artikel yang didapatkan yaitu 377 artikel kemudian diskriminasi dengan kriteria inklusi menggunakan format *PEOS* dan jumlah artikel yang sesuai berjumlah 6 artikel. dari keenam artikel menyatakan bahwa tingkat kepatuhan masyarakat sebagian besar dalam kategori patuh terhadap protokol kesehatan, faktor yang mempengaruhi tingkat kepatuhan masyarakat yaitu faktor usia, jenis kelamin, pendidikan, tingkat pengetahuan tentang covid-19. Dalam analisa statistik menyatakan pada korelasi antara faktor-faktor tersebut mempunyai nilai korelasi yang signifikan terhadap tingkat kepatuhan, untuk meningkatkan kepatuhan masyarakat terhadap protokol kesehatan, petugas kesehatan dan pemerintah harus memberikan promosi kesehatan lebih khususnya kepada masyarakat yang memiliki usia lanjut, pendidikan rendah dan tingkat pengetahuan yang rendah, untuk meningkatkan kepatuhan protokol kesehatan terhadap masyarakat.

Kata Kunci: Faktor Usia, Jenis Kelamin, Pendidikan, Pengetahuan

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ABSTRACT

Hidayati, Ivtitahul*, Subiastutik, Eni **, Yuhbaba, Zidni Nuris *** 2021.
factors that affect the level of community compliance in complying with health protocols during the Covid-19 Pandemic Literature Review. Thesis. Nursing Science Study Program, University of dr. Soebandi Jember.

COVID-19 is a disease caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2). The prevalence in the world of the spread of the corona virus as of January 2021 was recorded at 103 million cases with a cure rate of 57.3 million and a death rate of 2.22 million. The prevalence in Indonesia is in the top 19 countries with the most cases with a total of 1.1 million cases and a cure rate of 897,000 and a death rate of 30,581. This requires immediate follow-up. Even though the government has promoted health protocols to the public a lot, there are still many people who do not comply with health protocols, either using masks, washing hands and keeping a distance. The purpose of knowing the factors that affect the level of community compliance in complying with health protocols during the Covid-19 Pandemic. *literature review research design*. Search articles using databases such as *Google Scholar, Proquest and PubMed*, the articles obtained were 377 articles and then screened with inclusion criteria using the *PEOS* format and the number of articles that matched 6 articles. of the six articles stated that the level of community compliance was mostly in the category of complying with health protocols, the factors that influenced the level of community compliance were age, gender, education, level of knowledge about covid-19. In statistical analysis, it is stated that the correlation between these factors, to increase public compliance with health protocols, health workers and the government should provide more health promotion in particular. to people who have advanced age, low education and low levels of knowledge, to improve compliance with health protocols for the community.

Keywords: Age, Gender, Education, Knowledge

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Ivtitahul Hidayati

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COVID-19 : Corona Virus Disaese – 19

PHBS : Perilaku hidup bersih dan sehat

PSBB : Pembatasan Sosial Berskala Besar

SARS-CoV-2 : *Severe acute respiratory syndrome coronavirus 2*

WFH : *Work from home*

WHO : *World Health Organization*

BAB 1

PENDAHULUAN

1.1 Latar Belakang

Pada awal tahun 2020 terjadi pandemi yang disebabkan oleh beta-coronavirus novel yang merupakan virus corona tipe baru, penyakitnya dikenal dengan *Coronavirus Disease 2019* (Covid-19). Penyakit ini memunculkan gejala umum seperti demam, batuk kering, kelelahan, dan pada beberapa kasus yang lebih serius dapat menyebabkan sesak napas serta gangguan gastrointestinal. Virus ini menyebar melalui tetesan cairan (*droplets*) yang dikeluarkan oleh orang yang terjangkit Covid-19 kemudian masuk melalui mulut, hidung, atau mata orang lain (Wiranti et al., 2020).

Penyebaran Covid-19 yang awalnya hanya terjadi di China kemudian menyebar hampir ke seluruh negara, termasuk salah satunya adalah Indonesia. Saat ini secara global penyebaran virus corona per bulan Januari 2021 tercatat 103 juta kasus dengan angka kesembuhan 57,3 juta dan angka kematian 2,22 juta. Dari angka tersebut Negara Amerika menjadi penyumbang kasus terbanyak yaitu 26,5 juta, sedangkan Indonesia masuk dalam posisi 19 besar Negara dengan kasus terbanyak dengan jumlah 1,1 juta kasus dan angka kesembuhan 897.000 serta dengan angka kematian 30.581. Angka tersebut terus mengalami peningkatan setiap harinya baik secara global termasuk di Indonesia (WHO, 2021).

Menanggapi hal tersebut *World Health Organization* (WHO), menghimbau agar rajin membersihkan tangan menggunakan sabun maupun cairan berbasis alkohol, hindari sering menyentuh bagian wajah (mata, mulut dan hidung) serta melakukan pembatasan kontak fisik dengan orang lain (*social distancing*), yang semua itu merupakan langkah dasar menekan angka penyebaran virus ini. Meskipun telah ada himbauan tersebut, namun kasus Covid-19 terus bertambah. Secara nasional terdapat lima wilayah yang memiliki kasus tertinggi, yaitu Provinsi DKI (277.000 kasus), Provinsi Jawa Barat (155.000 Kasus), Provinsi Jawa Tengah (127.000 Kasus), Provinsi Jawa Timur (114.000 Kasus) dan Sulawesi Selatan (49.005 Kasus) (Kemenkes, 2020). Sehingga ditetapkanlah istilah pandemic terhadap kejadian coronavirus-19 ini oleh *World Health Organization* (WHO) (Utami et al., 2020)

Dengan dinyatakannya *corona virus* 2019 (Covid-19) sebagai pandemic, maka akan membuat kepanikan pada masyarakat luas. Karena dengan status pandemic ini maka pemerintah dan organisasi kesehatan yang berwenang harus merekomendasikan dan menerapkan berbagai penahanan serta strategi mitigasi, seperti menjaga jarak, karantina mandiri, penutupan bidang ekonomi, merubah tatanan pelayanan kesehatan bahkan termasuk strategi *lockdown* (Smirmaul et al., 2020). Hal tersebut sesuai dengan kebijakan atau peraturan pemerintah dalam mencegah pertambahan jumlah kasus yaitu berupa menerapkan protokol kesehatan penanganan Covid-19

diantaranya mencuci tangan, menjaga jarak, memakai masker bahkan kebijakan pembatasan pergerakan sosial (*lockdown*).

Sekalipun penerapan protocol kesehatan tersebut sering dipromosikan oleh pemerintah, masih banyak kalangan masyarakat yang enggan mengikuti protocol kesehatan baik menggunakan masker, mencuci tangan apa lagi menjaga jarak. Banyaknya angka ketidakpatuhan dalam mentaati peraturan akan pencegahan Covid-19 merupakan suatu bentuk ketidakdisiplinan masyarakat dalam bergotongroyong dalam memerangi virus ini. Dari beberapa faktor ketidakpatuhan masyarakat, faktor status sosial ekonomi menjadi suatu alasan yang sangat tinggi dan sering diungkapkan oleh masyarakat. Setelah adanya covid-19 perekonomian semakin memburuk sedangkan kebutuhan seperti sandang pangan terus meningkat serta dibarengi dengan naiknya harga sembako membuat masyarakat harus memilih salah satu dari kedua pilihan antara berdiam diri tanpa memenuhi kebutuhan atau terpaksa keluar rumah demi memenuhi kebutuhan ekonomi keluarga. Hal inilah yang membuat banyak masyarakat khususnya kalangan ekonomi menengah kebawah untuk tidak mematuhi protocol kesehatan (Tanoto, 2018)

Hal ini tergambarkan dari hasil survey yang dilakukan oleh Badan Pusat Statistik Indonesia (BPS), pada bulan lalu yang menggelar survei perilaku masyarakat di masa pandemi Covid-19. Survei digelar secara online pada 7 September s/d 14 September 2020 dengan jumlah responden sebanyak 90.967 responden. Dalam penggunaan sebanyak 6% responden

jarang atau kadang-kadang saja pakai masker. Sementara ada 2,02% tidak pernah atau jarang sekali pakai masker. Dalam penerapan protokol mencuci tangan selama 20 detik dengan sabun sebanyak 16,97% kadang-kadang saja sementara ada 5,32% yang tidak pernah atau jarang sekali cuci tangan. Sementara dalam penerapan protokol menjaga jarak minimal 1 meter, sebanyak 20,98% jarang atau hanya kadang-kadang jaga jarak. Lalu ada 5,48% responden yang tidak pernah atau jarang sekali jaga jarak. Adapun alasan masyarakat yang tidak mematuhi protocol kesehatan antara lain kurangnya pengetahuan akan dampak, faktor serta cara menanggulangi corona virus dan kemudian juga kurangnya pengetahuan tentang protocol kesehatan Covid-19 menjadi kunci mendasar dari banyaknya masyarakat yang kurang sadar akan kepatuhan terhadap kebijakan pemerintah diatas (Kemenkes, 2020)

Hal tersebut diatas menjadikan pemerintah kesulitan memperoleh kepatuhan masyarakat untuk mentaati kebijakannya terkait penanganan wabah. Semua kebijakan ataupun himbauan pemerintah terkesan diabaikan atau tidak dipatuhi masyarakat. Mulai dari himbauan menjaga jarak, tetap di rumah, sampai dengan penggunaan masker seperti tak dihiraukan. Terbukti masyarakat tetap banyak beraktifitas di luar rumah. Kerumunan warga juga masih tampak dimana-mana. Bahkan saat lebaran dan hari-hari besar, masyarakat beraktifitas secara normal, berhimpitan di mall, di pasar, di stasiun dan terminal. Ketidakpatuhan dan ketidakdisiplinan masyarakat baik

dengan alasan apapun akan menjadikan suatu faktor utama dalam penambahan kasus Covid-19 di Indonesia (Harjudin, 2020)..

Berangkat dari fenomena diatas, kurangnya tingkat kepatuhan masyarakat dalam menjalani protocol kesehatan menjadi suatu hal yang menarik untuk dilakukan suatu *literature review*, sehingga peneliti tertarik untuk melakukan kajian *literature review* tentang faktor-faktor yang mempengaruhi tingkat kepatuhan masyarakat dalam mematuhi protokol kesehatan di masa Pandemic Covid-19.

1.2 Rumusan Masalah

Faktor-faktor apa saja yang dapat tingkat kepatuhan masyarakat dalam mematuhi protokol kesehatan di masa Pandemic Covid-19 ditinjau dari *literature review*?

1.3 Tujuan Penelitian

1.3.1. Tujuan Umum

Untuk menganalisis faktor-faktor yang mempengaruhi tingkat kepatuhan masyarakat dalam mematuhi protokol kesehatan di masa Pandemic Covid-19 dengan *literature review*.

1.3.2. Tujuan Khusus

- a. Menganalisis faktor usia dalam mempengaruhi kepatuhan masyarakat dalam mematuhi protokol kesehatan dimasa pandemic covid – 19.
- b. Menganalisis faktor Jenis kelamin dalam mempengaruhi kepatuhan masyarakat dalam mematuhi protokol kesehatan dimasa pandemic covid – 19.

- c. Menganalisis faktor tingkat pendidikan dalam mempengaruhi kepatuhan masyarakat dalam mematuhi protokol kesehatan dimasa pandemic covid – 19.
- d. Menganalisis faktor tingkat pengetahuan dalam mempengaruhi kepatuhan masyarakat dalam mematuhi protokol kesehatan dimasa pandemic covid – 19

1.4 Manfaat Penelitian

1.4.1. Manfaat Teoritis

Literature review ini diharapkan menjadi suatu tambahan deskripsi teori tentang suatu hal yang mempengaruhi tingkat kepatuhan khususnya kepatuhan masyarakat terhadap protocol kesehatan Covid-19 pada bidang tingkat pengetahuan dan tingkat sosial ekonomi, sehingga hasil *literature review* ini dapat bermanfaat untuk tambahan literature dalam penelitian selanjutnya.

1.4.2. Manfaat Praktis

1. Pelayanan Kesehatan

Literature review ini diharapkan memberikan manfaat kepada para pelaku praktik khususnya keperawatan komunitas tentang bagaimana melakukan pendekatan kepada masyarakat dalam memberikan arahan protocol kesehatan khususnya pada kasus covid-19.

2. Responden

Sebagai informasi penting kepada responden khususnya yang tingkat kepatuhannya kurang atau rendah, agar dapat menjadi bahan acuan dalam mematuhi protocol kesehatan pada masa pandemik Covid-19.

BAB 2

TINJAUAN PUSTAKA

2.1 Konsep Dasar Covid-19

2.1.1 Pengertian Covid-19

Penyakit virus Corona - 2019 (COVID-19) yang disebabkan oleh SARS-CoV-2 (*severe acute respiratory syndrome coronavirus 2*), telah menyebabkan hal yang belum pernah terjadi sebelumnya dan sangat berdampak negative pada dunia modern. Mulai pertengahan Mei 2020, hampir lima juta orang telah dikonfirmasi COVID-19 di seluruh dunia serta telah menyebabkan puluhan ribu meninggal (Tulenko & Vervoort, 2020)

Sejak kasus pertama di Wuhan, terjadi peningkatan kasus COVID-19 di China setiap hari dan memuncak diantara akhir Januari hingga awal Februari 2020. Awalnya kebanyakan laporan datang dari Hubei dan provinsi di sekitar, kemudian bertambah hingga ke provinsi-provinsi lain dan seluruh China. Tanggal 30 Januari 2020, telah terdapat 7.736 kasus terkonfirmasi COVID-19 di China, dan 86 kasus lain dilaporkan dari berbagai negara seperti Taiwan, Thailand, Vietnam, Malaysia, Nepal, Sri Lanka, Kamboja, Jepang, Singapura, Arab Saudi, Korea Selatan, Filipina, India, Australia, Kanada, Finlandia, Prancis, dan Jerman. COVID-19 pertama dilaporkan di Indonesia pada tanggal 2 Maret 2020 sejumlah dua kasus.⁹ Data 31

Maret 2020 menunjukkan kasus yang terkonfirmasi berjumlah 1.528 kasus dan 136 kasus kematian.¹⁰ Tingkat mortalitas COVID-19 di Indonesia sebesar 8,9%, angka ini merupakan yang tertinggi di Asia Tenggara (Susilo et al., 2020)

2.1.2 Ketangguhan Kesehatan Komunitas di Masa Pandemi Covid-19

Di dalam konteks pandemi Covid-19, penerapan perilaku hidup bersih dan sehat (PHBS) oleh setiap warga masyarakat disebut sebagai cara yang paling efektif dalam mencegah infeksi dan penyebaran Covid-19. Rajin mencuci tangan dengan air bersih dan sabun, makan sayur dan buah, serta aktivitas fisik rutin merupakan perilaku yang dapat mencegah infeksi Covid-19. Oleh karena itu, perilaku ini dikampanyekan secara gencar di masyarakat, bersamaan dengan kampanye penggunaan masker dan menjaga jarak fisik. Disituasi seperti ini, maka diperlukan kerjasama antara keluarga, tokoh masyarakat dan petugas kesehatan antara lain adalah sebagai pengendali sosial, penjaga dan penegak nilai-nilai dan norma-norma yang berlaku di masyarakat. Selain itu juga berperan dalam memecahkan berbagai permasalahan yang terjadi. Serta memberikan dukungan, bimbingan, motivasi serta pengarahan pada masyarakatnya (Rosidin et al., 2020).

2.1.3 Kebijakan Pemerintah tentang Protokol Kesehatan

Upaya mencegah penyebaran virus dan menanggulangi dampak pandemi bukan hanya merupakan tanggung jawab pemerintah semata, tetapi memerlukan peran serta setiap elemen masyarakat. Apabila setiap warga masyarakat berperan aktif dalam upaya pencegahan, maka pandemi akan berhasil dikendalikan. Para ahli kesehatan menganjurkan penggunaan masker, menjaga jarak saat interaksi sosial, dan rajin mencuci tangan dengan sabun dan air bersih yang mengalir sebagai kunci utama memutus mata rantai penyebaran virus. Hal ini tampak mudah, tetapi pada dasarnya sulit diterapkan secara konsisten di masyarakat karena merupakan sebuah tindakan yang relatif baru dan belum menjadi kebiasaan apalagi perilaku di masyarakat. Pengenalan tindakan baru menjadi kebiasaan dan bahkan menjadi perilaku yang memerlukan waktu dan memerlukan promosi secara berulang-ulang (Rosidin et al., 2020)

Indonesia telah menghimbau adanya Pembatasan Sosial Berskala Besar (PSBB) sebagai upaya dari social distancing. PSBB adalah pembatasan kegiatan tertentu penduduk dalam suatu wilayah yang diduga terinfeksi Covid-19 sedemikian rupa untuk mencegah kemungkinan penyebaran virus. PSBB mengatur tentang peliburan sekolah dan tempat kerja; kegiatan keagamaan; kegiatan di tempat atau fasilitas umum; kegiatan sosial dan budaya; moda transportasi, serta pembatasan kegiatan lainnya khusus terkait aspek pertahanan dan keamanan. Karantina perorangan yang hanya diperuntukkan bagi

pasien individu, sudah dianggap tidak lagi efektif dalam memutus mata rantai virus saat masa pandemic (Pradana et al., 2020).

2.1.4 Pembatasan Sosial Berskala Besar (PSBB)

Pemerintah mengeluarkan kebijakan terkait dengan hal ini melalui Peraturan Pemerintah Nomor 21 tahun 2020 tentang Pembatasan Sosial Berskala Besar (PSBB) dalam Rangka Percepatan Penanganan Covid-19 dan diturunkan oleh Kementerian Kesehatan melalui Peraturan Menteri Kesehatan nomor 9 tahun 2020 tentang Pedoman Pembatasan Sosial Berskala Besar Dalam Rangka Percepatan Penanganan Covid-19 (Januar Mahardhani, 2020).

Adapun kebijakan yang terdapat dalam Pembatasan Sosial Berskala Besar (PSBB) antara lain:

1. Tidak bekerja di luar rumah
2. Tidak pulang kampung untuk 'idul fitri
3. Tidak melakukan ibadah di luar rumah secara kolektif
4. Tidak naik ojek/ojek online
5. Tidak mendatangi kegiatan di luar rumah yang dihadiri oleh lebih dari lima orang (Mujani & Irvani, 2020)

Adapun ketentuan dan anjuran-anjuran terkait pengaturan jarak sosial, PSBB, sebagai berikut:

1. Bekerja di rumah
2. Beribadah di rumah
3. Menghindari kerumunan lebih dari 5 orang

4. Kendaraan pribadi dikurangi penumpangnya
5. Kendaraan umum dikurangi penumpangnya
6. Mengendarai sepeda motor tidak boleh membonceng
7. Ojek/ojol tidak boleh mengangkut penumpang
8. Percaya PSBB dapat menekan penyebaran wabah
9. Harus memakai masker
10. Harus jaga jarak minimal 1 meter
11. Harus cuci tangan pakai sabun secara teratur dengan air mengalir
12. Tidak ke luar rumah
13. Sanksi denda bagi pelanggar PSBB
14. Sanksi pidana bagi pelanggaran PSBB (Mujani & Irvani, 2020)

2.1.5 Kenormalan Baru

Kenormalan baru dalam Bahasa Inggris disebut dengan *new normal* pada mulanya adalah istilah bidang ekonomi dan bisnis yang merujuk keadaan keuangan pada tahun 1998, 2008 dan 2020 saat adanya pandemi Covid-19. Sejak tahun itu istilah kenormalan baru dipergunakan dalam berbagai aktivitas yang menandakan bahwa terdapat suatu perbedaan yang sebelumnya dianggap tidak normal pada saat ini menjadi normal dan umum untuk dilakukan. Kenormalan baru telah menjadi wacana secara global dalam rangka menjadikan masyarakat untuk berteman dengan Covid-19. Pada pelaksanaan kenormalan baru masyarakat harus melakukan perubahan perilaku,

beradaptasi dan hidup berdampingan dengan Covid-19 (Pradana et al., 2020).

Pada kenormalan baru ini masyarakat wajib untuk mematahui anjuran yang diberikan oleh pemerintah. Pada pelaksanaannya kebiasaan yang harus ada pada masyarakat adalah sebagai berikut:

1. Mengenakan masker dalam segala aktivitas.
2. Pengecekan suhu tubuh. Kegiatan ini akan dilakukan selama pandemi Covid- 19 belum hilang.
3. Penyemprotan disinfektan.
4. Rajin mencuci tangan
5. Jaga jarak.
6. Memanfaatkan layanan online.
7. Menerapkan pola hidup sehat (Purnamasari & Raharyani, 2020).

Selain itu, terdapat beberapa panduan yang harus diperhatikan oleh masyarakat dalam menjalani kenormalan baru menurut (Januar Mahardhani, 2020), yaitu antara lain:

1. Pencegahan virus pada transportasi umum. Selama pandemi Covid-19 pada saat mempergunakan fasilitas transportasi umum harus selalu menggunakan masker, faceshield, dan wajib untuk menjaga jarak antar penumpang yaitu satu meter. Selain itu juga diusahakan untuk tidak memegang gagang pintu serta pegangan yang ada di dalam kendaraan. Usahakan juga untuk selalu

membawa hand sanitizer dan menggunakan sarung tangan jika memang dibutuhkan.

2. Mencegah virus selama beraktivitas di tempat kerja. Pada saat telah sampai di tempat kerja maka yang pertama wajib dilakukan adalah mencuci tangan dengan air yang mengalir dan sabun, setelah itu wajib ada pemeriksaan suhu tubuh menggunakan termogun. Diwajibkan juga untuk menjaga jarak minimal satu meter dalam melakukan interaksi dengan teman di tempat kerja. Selama beraktivitas di tempat kerja harus menerapkan perilaku new normal untuk pencegahan virus, di antaranya menggunakan masker dan faceshield, menggunakan hand sanitizer setelah bersentuhan atau memegang benda di tempat kerja yang berpotensi dipegang oleh banyak orang, sering mencuci tangan, menjaga kebersihan benda di sekitar tempat aktivitas bekerja, menutup hidung dan mulut menggunakan tisu ketika bersin, atau batuk, dan tidak membuang tisu bekas sembarangan. Jika kondisi tubuh tidak memungkinkan memungkinkan untuk beraktivitas di tempat kerja maka diwajibkan untuk melakukan aktivitas kerja dengan bekerja dari rumah atau work from home (WFH).
3. Selalu menjaga kebersihan lingkungan tempat kerja. Perusahaan harus memastikan bahwa seluruh area yang digunakan untuk beraktivitas tetap bersih dan higienis dengan melakukan pembersihan secara berkala menggunakan desinfektan. Area yang

wajib selalu untuk dibersihkan secara berkala setiap empat jam sekali adalah pegangan pintu dan tangga, tombol lift, peralatan kantor, dan fasilitas umum lainnya. Selain itu juga harus selalu menjaga kualitas udara di lingkungan tempat kerja dengan cara mengoptimalkan sirkulasi udara, mengatur sinar matahari yang masuk ruangan kerja, dan pembersihan filter air conditioner (AC).

4. Setelah berpergian wajib untuk mencegah virus. Pencegahan virus ini dilakukan dengan membersihkan diri sebelum bertemu anggota keluarga di rumah. Aktivitas yang dilakukan adalah membuka sepatu atau sandal dan menjemurnya ditempat yang terkena sinar matahari langsung atau dapat juga dengan menyemprot sepatu atau barang yang telah dipergunakan selama beraktivitas di luar seperti tas, pakaian, ponsel, laptop dan pulpen menggunakan cairan disinfektan. Sebelum melakukan aktivitas lainnya dirumah maka dianjurkan untuk mandi agar menjemurnya ditempat yang terkena sinar matahari langsung atau dapat juga dengan menyemprot sepatu atau barang yang telah dipergunakan selama beraktivitas di luar seperti tas, pakaian, ponsel, laptop dan pulpen menggunakan cairan disinfektan. Sebelum melakukan aktivitas lainnya dirumah maka dianjurkan untuk mandi agar
5. Membeli obat dan makanan secara aman. Tidak diperbolehkan untuk membeli obat- obatan pada sarana kesehatan yang tidak resmi. Pembelian obat hendaknya di apotek yang telah memiliki

izin dari pemerintah. Pembelian obat juga seharusnya menggunakan resep dokter. Pembelian obat dan makanan juga dapat dilaksanakan secara online, tetapi wajib mempertimbangkan adanya penawaran online, murah, dari dijual pada apotik atau toko yang tidak jelas.

6. Pencegahan penjual dan pembeli makanan. Dalam kegiatan ini yang wajib untuk diperhatikan adalah kebersihan tempat makan, alat masak, proses memasak, kesegaran makanan, serta pelayanan yang diberikan. Transaksi jual beli dianjurkan menggunakan online hal ini dikarenakan transaksi jual beli secara langsung akan sangat berisiko untuk menularkan virus. Ketika transaksi antara pembeli dan penjual wajib sebelumnya untuk cuci tangan atau pakai hand sanitizer, menggunakan masker dan faceshield, menjaga jarak satu meter, dan sangat dianjurkan untuk tidak makan di tempat. (Januar Mahardhani, 2020).

2.2 Konsep Dasar Tingkat Kepatuhan

2.2.1 Pengertian Tingkat Kepatuhan

kepatuhan adalah salah satu perilaku pemeliharaan kesehatan yaitu usaha seseorang untuk memelihara kesehatan atau menjaga kesehatan agar tidak sakit dan usaha penyembuhan apabila sakit. Selain itu pengertian kepatuhan adalah tingkat perilaku pasien yang tertuju pada instruksi atau petunjuk yang diberikan dalam bentuk

terapi apapun yang ditentukan baik diet, latihan, pengobatan, atau menepati janji pertemuan dengan dokter (Notoatmodjo, 2011).

2.2.2 Faktor yang Mempengaruhi Kepatuhan

Menurut (Notoatmodjo, 2010), faktor-faktor yang mempengaruhi tingkat kepatuhan adalah :

1. Usia berhubungan dengan tingkat kepatuhan, meskipun terkadang usia bukan menjadi penyebab ketidakpatuhan, namun semakin tua usia, maka akan semakin menurun daya ingat, pendengaran, dan penglihatan, sehingga akan membuat seseorang tidak patuh.
2. Jenis kelamin juga mempengaruhi kepatuhan, dalam hal ini seorang perempuan yang memiliki sifat penuh kasih sayang, merasa bertanggung jawab terhadap kesejahteraan orang disekitarnya. Sedangkan seorang laki-laki cenderung memiliki sifat agresif, senang berpetualang, dan berani mengambil resiko. Dalam konteks ini resiko yang ada salah satunya yaitu resiko tertular suatu penyakit. Sehingga adanya perbedaan sifat yang dimiliki laki-laki dan perempuan, perempuan cenderung lebih takut untuk melanggar peraturan.
3. Pendidikan adalah usaha sadar dan terencana untuk mewujudkan suasana belajar dan proses pembelajaran agar peserta didik secara aktif mengembangkan potensi dirinya untuk memiliki kekuatan spiritual keagamaan, pengendalian diri, kepribadian, kecerdasan, akhlak mulia, serta keterampilan yang diperlukan dirinya,

masyarakat, bangsa, dan negara. Pendidikan klien dapat meningkatkan kepatuhan, sepanjang bahwa pendidikan tersebut merupakan pendidikan yang aktif.

4. Faktor Lingkungan dan Sosial Hal ini berarti membangun dukungan sosial dari keluarga dan teman-teman, kelompok-kelompok pendukung dapat dibentuk untuk membantu kepatuhan terhadap program pengobatan. Lingkungan berpengaruh besar, lingkungan yang harmonis dan positif akan membawa dampak yang positif serta sebaliknya.
5. Interaksi Petugas Kesehatan dengan Klien Meningkatkan interaksi petugas kesehatan dengan klien adalah suatu hal penting untuk memberikan umpan balik pada klien setelah memperoleh informasi tentang diagnosis. Suatu penjelasan penyebab penyakit dan bagaimana pengobatan dapat meningkatkan kepatuhan, semakin baik pelayanan yang diberikan tenaga kesehatan, semakin teratur pula pasien melakukan kunjungan.
6. Pengetahuan merupakan hasil tahu dan ini terjadi setelah orang melakukan penginderaan terhadap suatu obyek tertentu, dari pengalaman dan penelitian terbukti bahwa perilaku yang didasari oleh pengetahuan akan langgeng dari pada perilaku yang tidak didasari oleh pengetahuan. Menurut fungsinya pengetahuan merupakan dorongan dasar untuk ingin tahu, untuk mencari penalaran, dan untuk mengorganisasikan pengalamannya. Adanya

unsur pengalaman yang semula tidak konsisten dengan apa yang diketahui oleh individu akan disusun, ditata kembali atau diubah sedemikian rupa, sehingga tercapai suatu konsistensi. Semakin tinggi tingkat pengetahuan, semakin baik pula tingkat kepatuhan (Notoatmodjo, 2010)

2.2.3 Jenis-jenis Ketidakpatuhan

Adapun jenis-jenis ketidakpatuhan masyarakat dalam mentaati anjuran pelayanan kesehatan adalah sebagai berikut: (Notoatmodjo, 2010)

1. Ketidakpatuhan yang disengaja, meliputi :
 - a) Keterbatasan sarana dan prasarana
 - b) Sikap apatis pasien
 - c) Ketidakpercayaan pasien atas instruksi yang diberikan oleh petugas kesehatan.
2. Ketidakpatuhan yang tidak disengaja, meliputi :
 - a) Pasien lupa akan instruksi yang diberikan oleh petugas kesehatan.
 - b) Ketidakpatuhan pasien atas apa yang dianjurkan oleh petugas kesehatan.
 - c) Kesalahpahaman pasien atas instruksi yang telah diberikan

2.3 Konsep Dasar Tingkat Pengetahuan

2.3.1 Pengertian Pengetahuan

Pengetahuan merupakan hasil dari tahu, dan ini terjadi setelah orang melakukan penginderaan terhadap suatu obyek tertentu. Penginderaan terjadi melalui pancaindra manusia, yakni penglihatan, penginderaan, penciuman, rasa, dan raba. Sebagian besar pengetahuan manusia diperoleh melalui mata dan telinga (Tarigan et al., 2018).

Pengetahuan adalah hasil tahu dari manusia, yang sekedar menjawab “*what*”, misalnya apa air, apa manusia, apa alam, dan sebagainya (Notoatmodjo, 2010)

Pengetahuan adalah hasil penginderaan manusia, atau hasil tahu seseorang terhadap objek melalui indera yang dimilikinya (mata, hidung, telinga, dan sebagainya). Dengan sendirinya, pada waktu penginderaan sampai menghasilkan pengetahuan tersebut sangat dipengaruhi intensitas perhatian dan persepsi terhadap objek. Sebagian besar pengetahuan seseorang diperoleh melalui indera pendengaran (telinga), dan indera penglihatan (mata) (Notoatmodjo, 2011)

Menurut (Keraf & Mikhael, 2001), Pengetahuan adalah keseluruhan pemikiran, gagasan, ide, konsep, dan Pemahaman yang dimiliki manusia tentang dunia dan segala isinya, termasuk manusia dan kehidupannya.

Pengetahuan itu sendiri dipengaruhi oleh faktor pendidikan formal. Pengetahuan sangat erat hubungannya dengan pendidikan, dimana diharapkan bahwa dengan pendidikan yang tinggi maka orang

tersebut akan semakin luas pula pengetahuannya. Akan tetapi perlu ditekankan, bukan berarti seseorang yang berpendidikan rendah mutlak berpengetahuan rendah pula. Pengetahuan seseorang tentang suatu objek mengandung dua aspek, yaitu aspek positif dan negatif. Kedua aspek ini yang akan menentukan sikap seseorang semakin banyak aspek positif dan objek yang diketahui, maka akan menimbulkan sikap makin positif terhadap objek tertentu (Abdul et al., 2020).

2.3.2 Tingkat Pengetahuan

Pengetahuan mempunyai beberapa tingkatan tingkatan sekedar tahu sampai tingkatan mengevaluasi yang diketahui. tingkat Pengetahuan yang tercakup dalam domain kognitif sebagai berikut adalah (Notoatmodjo, 2011):

1) Tahu (*know*)

Tahu diartikan sebagai mengingat suatu materi yang telah dipelajari sebelumnya. Termasuk ke dalam pengetahuan tingkat ini adalah mengingat kembali (*recall*) sesuatu yang spesifik dari seluruh bahan yang dipelajari atau rangsangan yang telah diterima. Oleh sebab itu, tahu ini merupakan tingkat pengetahuan yang paling rendah. Kata kerja untuk mengukur bahwa orang tahu tentang apa yang dipelajari antara lain menyebutkan, menguraikan, mendefinisikan, menyatakan, dan sebagainya. Contoh : dapat menyebutkan tanda-tanda kekurangan kalori dan protein pada anak balita.

2) Memahami (*comprehension*)

Memahami diartikan sebagai suatu kemampuan untuk menjelaskan secara benar tentang objek yang diketahui, dan dapat menginterpretasikan materi tersebut secara benar. Orang yang telah paham terhadap objek atau materi harus dapat menjelaskan, menyebutkan contoh, menyimpulkan, meramalkan, dan sebagainya terhadap objek yang dipelajari. Misalnya dapat menjelaskan mengapa harus makan makanan yang bergizi.

3) Aplikasi (*application*)

Aplikasi diartikan sebagai kemampuan untuk menggunakan materi yang telah dipelajari pada situasi atau kondisi real (sebenarnya). Aplikasi disini dapat diartikan sebagai aplikasi atau penggunaan hukum-hukum, rumus, metode, prinsip, dan sebagainya dalam konteks atau situasi yang lain. Misalnya dapat menggunakan rumus statistic dalam perhitungan-perhitungan hasil penelitian, dapat menggunakan prinsip-prinsip siklus pemecahan masalah (*problem solving cycle*) di dalam pemecahan masalah kesehatan dari kasus yang diberikan.

4) Analisis (*analysis*)

Analisis adalah suatu kemampuan untuk menjabarkan materi atau suatu objek ke dalam komponen-komponen, tetapi masih di dalam satu struktur organisasi, dan masih ada kaitannya satu sama lain. Kemampuan analisis ini dapat dilihat dari penggunaan kata kerja,

seperti dapat menggambarkan (membangun bagan), membedakan, memisahkan, mengelompokkan, dan sebagainya (Notoatmodjo, 2011).

5) Sintesis (*synthesis*)

Sintesis menunjukkan kepada suatu kemampuan untuk meletakkan atau menghubungkan bagian-bagian di dalam suatu bentuk keseluruhan yang baru. Dengan kata lain sintesis adalah suatu kemampuan untuk menyusun formulasi baru dari formulasi-formulasi yang ada.

6) Evaluasi (*evaluation*)

Evaluasi ini berkaitan dengan kemampuan untuk melakukan justifikasi atau penilaian terhadap suatu materi atau objek (Notoatmodjo, 2011).

2.3.3 Cara Memperoleh Pengetahuan

Cara memperoleh pengetahuan yang menurut (Notoatmodjo, 2010) adalah sebagai berikut :

1) Cara kuno untuk memperoleh pengetahuan :

a) Cara coba salah (*Trial and Error*)

Cara ini telah dipakai orang sebelum kebudayaan bahkan mungkin sebelum adanya peradaban. Cara coba salah ini dilakukan dengan menggunakan kemungkinan dalam memecahkan masalah dan apabila kemungkinan itu tidak berhasil maka dicoba. Kemungkinan yang lain sampai masalah tersebut dapat dipecahkan.

b) Cara kekuasaan atau otoritas

Sumber pengetahuan cara ini dapat berupa pemimpin-pemimpin masyarakat baik formal atau informal, ahli agama, pemegang pemerintah, dan berbagai prinsip orang lain yang menerima mempunyai yang dikemukakan oleh orang yang mempunyai otoritas, tanpa menguji terlebih dahulu atau membuktikan kebenarannya baik berdasarkan fakta empiris maupun penalaran sendiri.

c) Berdasarkan pengalaman pribadi

Pengalaman pribadi sekalipun dapat digunakan sebagai upaya memperoleh pengetahuan dengan cara mengulang kembali pengalaman yang pernah diperoleh dalam memecahkan permasalahan yang dihadapi masa lalu (Notoatmodjo, 2010).

d) Cara Akal Sehat

Akal sehat atau common sense kadang-kadang dapat menemukan teori atau kebenaran. Sebelum ilmu pendidikan ini berkembang, para orang tua zaman dahulu agar anaknya mau menuruti nasihat orang tuanya, atau agar anak disiplin menggunakan cara hukuman fisik bila anaknya berbuat salah, misalnya dijewer telinganya atau dicubit. Ternyata cara menghukum anak ini sampai sekarang berkembang menjadi teori atau kebenaran, bahwa hukuman adalah merupakan metode (meskipun bukan yang paling baik) bagi pendidikan anak.

Pemberian hadiah dan hukuman (reward and punishment) merupakan cara yang masih dianut oleh banyak orang untuk mendisiplinkan anak dalam konteks pendidikan (Notoatmodjo, 2010).

e) Kebenaran Melalui Wahyu

Ajaran dan dogma agama adalah suatu kebenaran yang diwahyukan dari Tuhan melalui para Nabi. Kebenaran ini harus diterima dan diyakini oleh pengikut-pengikut agama yang bersangkutan, terlepas dari apakah kebenaran tersebut rasional atau tidak.

f) Kebenaran secara Intuitif

Kebenaran secara intuitif diperoleh manusia cepat sekali melalui proses diluar kesadaran dan tanpa melalui proses penalaran atau berpikir. Kebenaran yang diperoleh melalui intuitif sukar dipercaya karena kebenaran ini tidak menggunakan cara-cara yang rasional dan yang sistematis. Kebenaran ini diperoleh seseorang hanya berdasarkan intuisi atau suara hati atau bisikan hati saja .

g) Melalui Jalan Pikiran

Sejalan dengan perkembangan kebudayaan umat manusia, cara berfikir manusia pun ikut berkembang. Dari sini manusia telah mampu menggunakan penalarannya dalam memperoleh pengetahuannya. Dengan kata lain, dalam memperoleh

kebenaranpengetahuan manusia telah menggunakan jalan pikirannya, baik melalui induksi maupun deduksi.

h) Induksi

Induksi adalah proses penarikan kesimpulan yang dimulai dari pernyataan-pernyataan khusus ke pertanyaan yang bersifat umum. Proses berpikir induksi berasal dari hasil pengamatan indra atau hal-hal yang nyata, maka dapat dikatakan bahwa induksi beranjak dari hal-hal yang konkret kepada hal-hal yang abstrak.

i) Deduksi

Deduksi adalah pembuatan kesimpulan dari pernyataan-pernyataan umum yang ke khusus. Aristoteles (384-322SM) mengembangkan cara berpikir deduksi ini ke dalam suatu cara yang disebut “silogisme”. Silogisme merupakan suatu bentuk deduksi berlaku bahwa sesuatu yang dianggap benar secara umum pada kelas tertentu, berlaku juga kebenarannya pada semua peristiwa yang terjadi pada setiap yang termasuk dalam kelas itu.

2) Cara modern dalam memperoleh pengetahuan

Cara baru atau modern dalam memperoleh pengetahuan pada dewasa ini lebih sistimatis, logis dan ilmiah. Cara ini disebut „metode penelitian ilmiah“, atau lebih populer disebut metodologi penelitian (*research methodology*). Cara ini mula-mula dikembangkan oleh Francis Bacon (1561-1626). Ia mengatakan bahwa dalam memperoleh

kesimpulan dilakukan dengan mengadakan observasi langsung, dan membuat pencatatan-pencatatan terhadap semua fakta sehubungan dengan objek yang diamati. Pencatatan ini mencakup tiga hal pokok yakni :

- a) Segala sesuatu yang positif, yakni gejala tertentu yang muncul pada saat dilakukan pengamatan.
- b) Segala sesuatu yang negatif, yakni gejala tertentu yang tidak muncul pada saat dilakukan pengamatan.
- c) Gejala-gejala yang muncul secara bervariasi, yaitu gejala-gejala yang berubah-ubah pada kondisi-kondisi tertentu. (Notoatmodjo, 2010).

2.3.4 Faktor – Faktor Yang Mempengaruhi Pengetahuan

Menurut (Wawan, 2010), faktor-faktor yang mempengaruhi pengetahuan dapat dibagi menjadi factor eksternal dan factor internal, adapun penjelasannya sebagai berikut:

1) Faktor internal

a) Pendidikan

Pendidikan berarti bimbingan yang diberikan seseorang terhadap perkembangan orang lain menuju ke arah cita-cita tertentu yang menentukan manusia untuk berbuat dan mengisi kehidupan untuk mencapai keselamatan dan kebahagiaan. Pendidikan diperlukan untuk mendapat informasi misalnya hal-

hal yang menunjang kesehatan sehingga dapat meningkatkan kualitas hidup (Wawan, 2010).

b) Pekerjaan

Pekerjaan adalah keburukan yang harus dilakukan terutama untuk menunjang kehidupannya dan kehidupan keluarga. Pekerjaan bukanlah sumber kesenangan, tetapi lebih banyak merupakan cara mencari nafkah yang membosankan, berulang dan banyak tantangan. Sedangkan bekerja umumnya merupakan kegiatan yang menyita waktu. Bekerja bagi ibu-ibu akan mempunyai pengaruh terhadap kehidupan keluarganya : (Wawan, 2010).

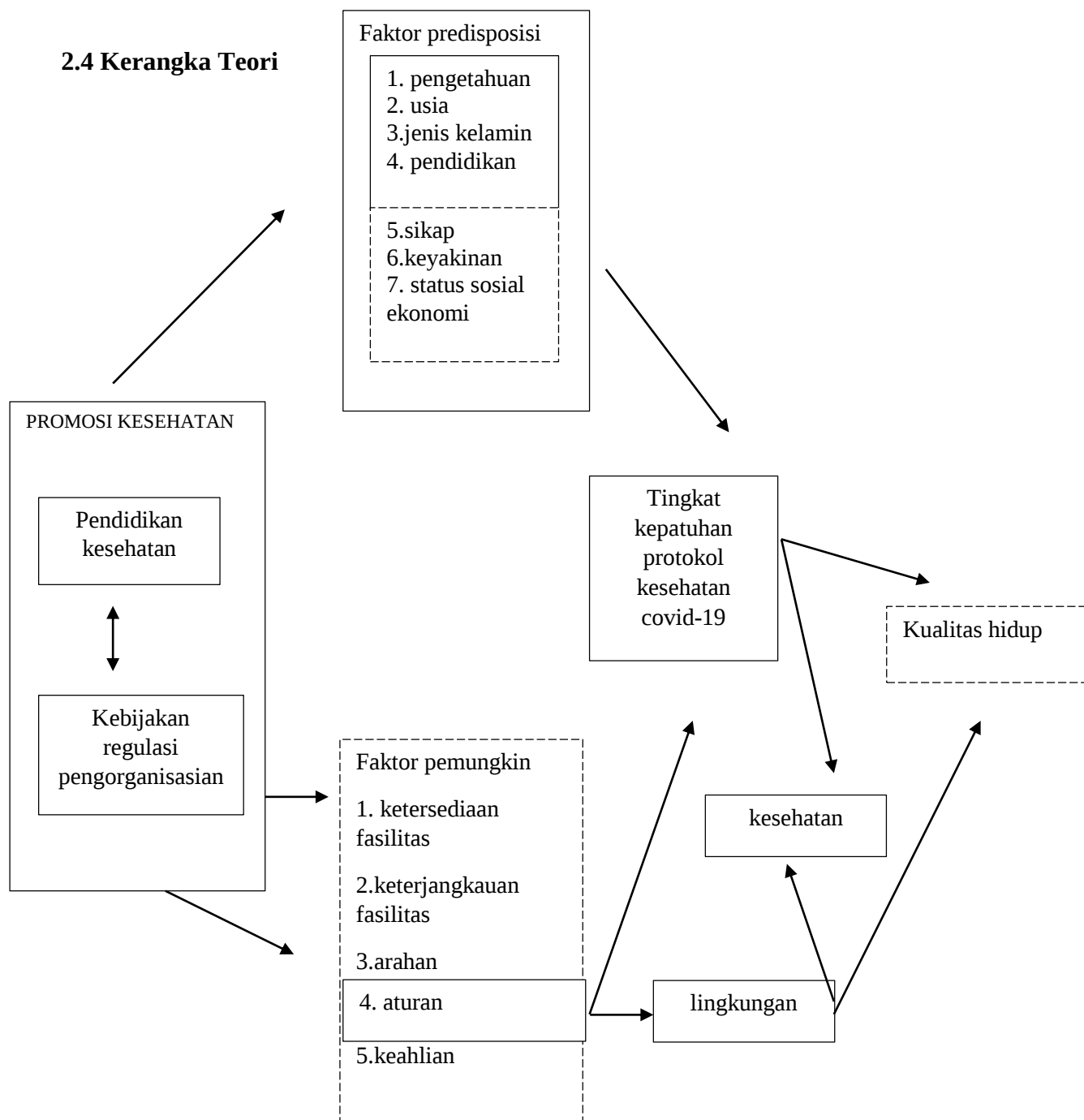
c) Umur

Usia adalah umur individu yang dihitung mulai saat dilahirkan sampai berulang tahun sedangkan menurut Hucklok semakin cukup umur, tingkat kematangan dan kekuatan seseorang akan lebih matang dalam berfikir dan bekerja.

3) Faktor Ekternal

a) Faktor Lingkungan

Lingkungan merupakan seluruh kondisi yang ada disekitar manusia dan pengaruhnya yang dapat mempengaruhi perkembangan dan perilaku orang atau kelompok.

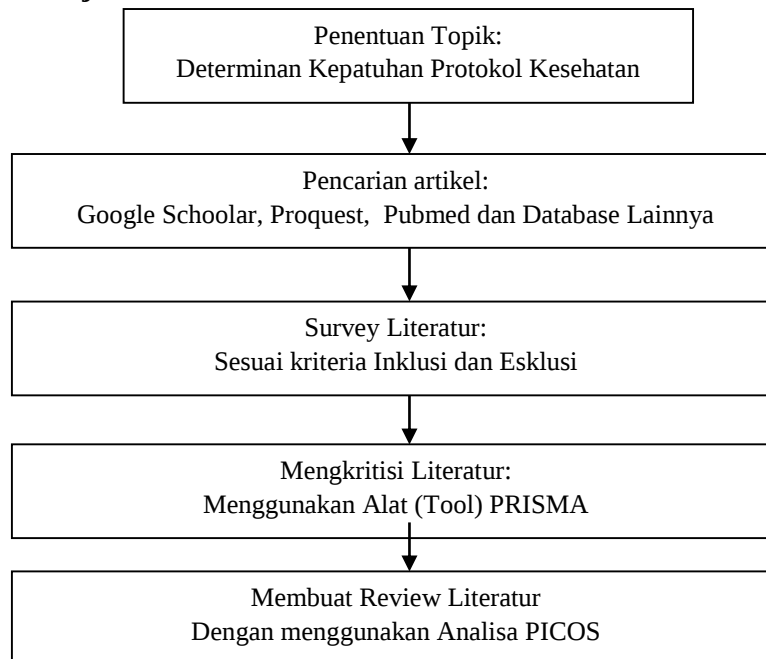


Gambar 2.1 : Kerangka Teori faktor faktor yang mempengaruhi tingkat kepatuhan masyarakat dalam mematuhi protokol kesehatan di masa Pandemic Covid-19

BAB 3

METODE PENELITIAN

3.1 Kerangka Kerja



Gambar 3.1 Kerangka Kerja literature Review Teori faktor faktor yang mempengaruhi tingkat kepatuhan masyarakat dalam mematuhi protokol kesehatan di masa Pandemic Covid-19

3.2 Strategi Pencarian *Literature*

3.2.1 Database Pencarian

Literature review yang merupakan rangkuman menyeluruh beberapa studi penelitian yang ditentukan berdasarkan tema tertentu. Sumber data sekunder yang didapat berupa artikel jurnal bereputasi baik nasional maupun internasional dengan tema yang sudah ditentukan (Nursalam, 2020).

Pencarian literature dilakukan pada bulan Januari - Februari 2021. Data yang digunakan dalam penelitian ini adalah data sekunder yang diperoleh bukan dari pengalaman langsung, akan tetapi diperoleh dari hasil penelitian yang telah dilakukan oleh peneliti-peneliti terdahulu. Pencarian literature dalam *literature review* ini menggunakan database yang dapat dipercaya kridebelitas jurnalnya dengan kriteria kualitas tinggi dan sedang, yaitu *Goolge Scholar*, *Pubmed* dan *Proquest*.

3.2. 2 Kata Kunci (*Keyword*) pencarian Literatur

Pencarian artikel atau jurnal menggunakan *keyword berbasis Booleanoperator (AND, OR, NOT)* yang digunakan untuk mempeluas atau menspesifikasikan pencarian, sehingga mempermudah dalam penentuan artikel atau jurnal yang digunakan. Kata kunci dalam *literature review* ini disesuaikan dengan *Medical Subject Heading (MeSH)* dan terdiri dari sebagai berikut:

Tabel 3.2 Kata Kunci Pencarian Artikel dalam bahasa Indonesia

Independen	Dependen	Populasi
Faktor Usia, Faktor Jenis Kelamin, Faktor Tingkat Pendidikan AND Faktor Tingkat Pengetahuan	“Kepatuhan Protokol Covid-19”	Masyarakat

Selain kata kunci diatas dalam bahasa Indonesia, peneliti juga melakukan pencarian artikel atau jurnal pada database international dengan menggunakan kata kunci berbahasa inggris.

Tabel 3.2 Kata Kunci Pencarian Artikel dalam Bahasa Inggris

Independent	Dependent	Population
Age factor, gender factor, education level factor AND knowledge factor	“Covid-19 Protocol Compliance”	<i>Public</i>

3.3 Hasil dan Seleksi Studi Literatur

3.3.1 Seleksi Studi

Dalam menentukan topik penelitian peneliti melihat bahwa hubungan tingkat stress, pola makan dan aktifitas fisik dapat mempengaruhi perubahan tekanan darah pada pasien hipertensi. Artikel dicari melalui pencarian Google scholar, scopus, PubMed dan SAGE dengan menggunakan kata kunci “Faktor Usia, Faktor Jenis Kelamin, Faktor Tingkat Pendidikan AND Faktor Tingkat Pengetahuan” serta dalam bahasa inggris yaitu “Age factor, gender factor, education level factor and knowledge factor”.

Semua judul yang dianggap sesuai dengan tujuan penelitian kemudian lakukan screening apakah judul pada artikel tersebut ada yang sesuai atau tidak. Setelah menemukan artikel judul yang sesuai kemudian artikel tersebut dilakukan screening kriteria inklusi dan eklusi. Kriteria Inklusi dalam Penulisan *Literature Review* ini yaitu artikel yang sesuai dengan topik yang diangkat, Artikel yang

mempunyai topik Faktor-Faktor yang mempengaruhi tingkat kepatuhan masyarakat dalam mematuhi protokol kesehatan di masa pandemic covid 19. Peneliti memilih artikel dalam rentang tahun 2016-2020 dan ditemukan 33 artikel di Pubmed dan 327 artikel di *google Scholar*, 17 pada Proquest jadi total artikel yang ditemukan yaitu 377 artikel atau jurnal yang berhubungan dengan Faktor-Faktor yang mempengaruhi tingkat kepatuhan masyarakat dalam mematuhi protokol kesehatan di masa pandemic covid 19. Dari total 377 artikel yang ditemukan, hanya 6 artikel yang memenuhi kriteria yaitu 1 artikel dari Pubmed, 4 artikel dari *google schooler*, 1 dari Proquest. Langkah selanjutnya melakukan include artikel yang masuk dalam kriteria inklusi, artikel yang tidak sesuai akan dikeluarkan dan tidak *direview*. Setelah dilakukan screening didapatkan hasil bahwa tidak ada artikel yang termasuk kriteria eksklusi lagi sehingga hasil akhir yang ada dapat dilakukan *review literature* sebanyak 6 Artikel/ jurnal.

3.3.2 Kriteria Inklusi dan Eksklusi

Strategi yang digunakan untuk mencari artikel atau jurnal menggunakan *PEOS framework*, yang terdiri dari:

- a. *Population/Problem* yaitu masalah yang akan dianalisis sesuai dengan tema yang sudah ditentukan dalam *literature review*
- b. *Eksposure* merupakan paparan yang dalam penelitian dapat mewakili intervensi maupun paparan lain yang akan di review.

- c. *Outcome* yaitu hasil atau luaran yang diperoleh pada studi terdahulu yang sesuai dengan tema yang sudah ditentukan dalam *literature review*
- d. *Study Design* yaitu desain penelitian yang digunakan dalam artikel yang akan di *review*.

Tabel 3.3 Format PEOS dalam *Literature Review*

Kriteria	Inklusi	Ekslusi
<i>Populasion</i>	Studi dengan populasi masyarakat usia dewasa-lansia	Studi dengan populasi masyarakat usia anak
<i>Eksposure</i>	Faktor-faktor kepatuhan protokol kesehatan	Tidak membahas faktor-faktor kepatuhan protokol kesehatan
<i>Outcomes</i>	Faktor-faktor yang berhubungan dengan kepatuhan protokol kesehatan, meliputi (usia, jenis kelamin, pendidikan dan tingkat pengetahuan)	Tidak membahas faktor-faktor yang berhubungan dengan kepatuhan protokol kesehatan.
<i>Study Design and publication type</i>	<i>Cross sectional. Analitik deskripsi, case study</i>	<i>Kualitatif</i>
<i>Publication years</i>	Antara tahun 2019 sampai 2021	Dibawah tahun 2019
<i>Language</i>	Indonesia dan Inggris	Selain Indonesia dan Inggris

3.3.3 Analisa Review Literatur

Rangkuman menyeluruh dalam bentuk literature review mengenai pengaruh faktor tingkat pengetahuan, peran orang tua, teman sebaya dan paparan media internet terhadap perilaku seksual pada remaja.. Tool atau alat evaluasi dari *literature review* yaitu dengan menganalisis jurnal dan artikel terkait dengan topic yang diambil dari berbagai database seperti Proquest, Science direct dan google scholar. Analisa jurnal dengan memfokuskan pada kesesuaian antara jurnal satu dengan yang lain tanpa adanya kesenjangan hasil. Adapun metode menganalisa dengan melihat Desain, Sampel, Variabel, Instrumen dan Analisis (DSVIA), rangkungan tersebut dituliskan dalam table dengan lengkap dari nama Author, Jurnal, Data base, Tahun terbitan, Metode DSVIA dan juga hasil penelitian. Yang nantinya hasil analisis tersebut dijadikan pedoman *literature review* dalam membahas hasil penelitian terkait topic yang dipadukan dengan berbagai teori lain yang menunjang baik dari buku, jurnal, artikel ataupun kajian pustaka lainnya.

BAB 4

HASIL DAN ANALISIS

4.1 Karakteristik Studi

Artikel yang didapatkan penulis untuk dijadikan sebagai literature review sebanyak 6 jurnal yang memenuhi kriteria inklusi dan terdiri dari 5 jurnal International dan 1 jurnal nasional yang diambil dari database *google scholar*, *Pubmed* dan *Proquest*. Dari keenam jurnal semua diambil dari metodologi penelitian yang sama yaitu penelitian kuantitatif dengan pendekatan *cross sectional* dan analitik deskriptif. Secara keseluruhan, semua penelitian membahas tentang faktor-faktor yang mempengaruhi tingkat kepatuhan masyarakat pada protocol kesehatan Covid-19, dengan variabel faktor antara lain tingkat pengetahuan dan status sosial ekonomi. Semua jurnal yang diambil mempunyai rentang tahun publikasi antara 2016-2021, dibawah ini merupakan table hasil penelusuran jurnal:

Tabel 4.1 Hasil Telusur Artikel

NO	Penulis (Tahun)	Nama Jurnal, Tahun, Volume jurnal dan database	Judul	Desain, Sampel, Variabel, Instrumen dan Analisis	Hasil
1	Erfani, A., Shahriarirad, R., & Ranjbar, K	Bulletin of the World Health Organization (Maret, 2020) - Vol. 01 No. 01 (Google Scholar)	Knowledge , Attitude and Practice toward the Novel Coronavirus (COVID-19) Outbreak : A Population- Based Survey in Iran	DESAIN: cross-sectional, online survey POPULASI/ SAMPEL: 8591 responden VARIABEL: Pengetahuan, praktik, kepatuhan , protocol kesehatan INSTRUMEN: Kuesioner Online ANALISIS: Multiple linear regression analysis	Hasil analisis menyatakan bahwa faktor usia, jenis kelamin pendidikan dan tingkat pengetahuan mempengaruhi tingkat kepatuhan terhadap protokol kesehatan dengan nilai <i>P</i> <i>value</i> 0,001,

- 2 Naser, A. Y., Dahmash, E. Z., Alwafi, H., Alsairafi, Z. K., Rajeh, A. M. Al, Alhartani, Y. J., Turkistani, F. M., & Alyami, H. S
Jurnal medRxiv (April 2020-Vol. 17 No.01) (Google Scholar)
Knowledge and practices towards COVID-19 during its outbreak: a multinational cross-sectional study
DESAIN: multinational cross-sectional study
POPULASI/ SAMPEL: 1,208 responden
VARIABEL: Pengetahuan, praktik, kepatuhan , protocol kesehatan
INSTRUMEN: Kuesioner Online
ANALISIS: Multiple linear regression analysis
Hasil analisis menyatakan bahwa faktor usia mempengaruhi tingkat kepatuhan terhadap protokol kesehatan dengan nilai P value 0,006, faktor jenis kelamin pada artikel ini dapat mempengaruhi tingkat kepatuhan dengan nilai P value 0,000 dan faktor tingkat pengetahuan juga dapat mempengaruhi kepatuhan dengan nilai P value 0,015.

3	Ferdous, M. Z., Id, S. I., Sikder, T., & Syed, A.	Jurnal Plos One (Oktober, 2020) – Vol. 15 No.10 (google Scholar)	COVID-19 outbreak in Bangladesh : An online-based cross-sectional study	DESAIN: Online-based cross-sectional study POPULASI/ SAMPEL: 2,017 responden VARIABEL: Sosio-demografi, Sikap, Pengetahuan dan praktik, pencegahan Covid-19, kepatuhan. INSTRUMEN: Kuesioner ANALISIS: Binary logistic regression	Hasil analisis menyatakan bahwa faktor usia dapat mempengaruhi kepatuhan terhadap protokol kesehatan dengan nilai P value 0,001. Faktor jenis kelamin dapat mempengaruhi kepatuhan terhadap protokol kesehatan dengan nilai P value 0,003. Dan faktor pendidikan pada artikel ini dapat mempengaruhi kepatuhan terhadap protokol kesehatan dengan nilai P value 0,004.
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- | | | | | | |
|---|--|---|--|---|---|
| 4 | Radovanovi, U., Öcal, A., Cvetkovi, V. M., & Nikoli, N | Enviromental Reseach and Public Health (Juni, 2020) – Vol. 17 - 4124 (Pubmed) | Preparedness and Preventive Behaviors for a Pandemic Disaster Caused by COVID-19 in Serbia | DESAIN: quantitative research regarding
POPULASI/ SAMPEL:. 975 responden
VARIABEL: Bencana; risiko epidemi; pandemi; kesiapan warga; virus corona; COVID-19.
INSTRUMEN: Kuesioner

ANALISIS: multivariate regression analysis | Hasil analisis menyatakan bahwa faktor usia dapat mempengaruhi kepatuhan terhadap protokol kesehatan dengan nilai P value 0,000. Faktor pendidikan dan tingkat pengetahuan dapat mempengaruhi kepatuhan terhadap protokol kesehatan dengan nilai P value 0,001. |
|---|--|---|--|---|---|

- 5 Zhong, B., International Knowledge , **DESAIN:** a quick online cross- Hasil analisis menyatakan bahwa
Luo, W., Li, Journal of attitudes , and sectional survey faktor jenis kelamin dan tingkat
H., Zhang, Biological practices **POPULASI/ SAMPEL:** 6910 pengetahuan dapat mempengaruhi
Q., Liu, X., Sciences towards responden kepatuhan terhadap protokol
Li, W., & (februari, 2020) COVID-19 **VARIABEL:.** Pengetahuan, Sikap, kesehatan dengan nilai P value
Li, Y – Vol.16 No.10 among Chinese Praktik, COVID-19 0,001 dan faktor pendidikan
 (Proquest) residents during **INSTRUMEN:** Kuesioner Online dapat mempengaruhi kepatuhan
 the rapid rise terhadap protokol kesehatan
 period of the dengan nilai P value 0,000.
 COVID-19 **ANALISIS: logistic regression**
 outbreak : a **analyses**
 quick online
 cross-sectional
 survey

6	Larasaty, P.	Nasional Official Statistics (2019 – Vol. 19 No.01) (google Scholar)	Faktor yang berpengaruh terhadap kepatuhan Masyarakat pada protokol kesehatan dalam mencegah penyebaran covid-19	Desain: analitik diskriptif Populasi/ sampel: data sekunder bps kemenkes ri 2020. Variabel: status reaksi responden, persepsi keefektifan isolasi mandiri, tingkat kekhawatiran tentang bepergian ke luar rumah, jenis kelamin, tingkat pendidikan, status pernikahan, status kesehatan, dan usia, kepatuhan, protokol covid-19. Instrumen: survei sosial demografi dampak covid -19 tahun 2020 dari bps Analisis: analisis deskriptif dan analisis regresi	Hasil analisis menyatakan bahwa faktor usia, jenis kelamin dan pendidikan dapat mempengaruhi kepatuhan terhadap protokol kesehatan dengan nilai P value 0,001. Dan tingkat pengetahuan dapat mempengaruhi kepatuhan terhadap protokol kesehatan dengan nilai P value 0,000.
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• >60 tahun

10%

Berdasarkan tabel 4.2 hasil analisis dari enam artikel didapatkan satu artikel sebagian besar usia responden 31-40 tahun, dua artikel sebagian besar usia responden 30-49 tahun, satu artikel sebagian besar usia responden 21-30 tahun, satu artikel sebagian besar usia responden 21-28 tahun, dan satu artikel sebagian besar usia responden 51-55 tahun.

4.2.2. Karakteristik Pendidikan Responden

Analisa karakteristik tingkat pendidikan dalam literature review ini, dilihat dari hasil dari artikel yang diambil dapat dilihat pada tabel berikut:

Tabel 4.3 Hasil temuan tingkat pendidikan pada 6 artikel *Literatur Review*

No	Peneliti + tahun	Pendidikan Responden	N	%
1	Erfani et al., (2020)	• Tidak Sekolah • Dibawah Diploma • Diploma • Sarjana/ akademik	12 responden 536 responden 1.590 responden 6453 responden	10% 15% 50% 25%
2	Naser et al., (2020)	• Sekolah menengah • Sarjana • Pasca sarjana	274 responden 732 responden 201 responden	20% 50% 30%
3	Ferdous et al., (2020)	• SMP • SMA • Sarjana • Pasca sarjana	20 responden 226 responden 1230 responden 541 responden	5% 15% 50% 30%
4	Radovanovi et al., (2020)	• Sekolah SD • Diploma/sarjana • Pasca sarjana	63 responden 558 responden 108 responden	20% 50% 30%
5	Zhong et al., (2020)	• SMA • Diploma • Sarjana • Pasca sarjana	1217 responden 1306 responden 3043 responden 1344 responden	10% 20% 50% 20%
6	Larasaty, (2019)	• SD • SMP • SMA	193 responden 187 responden 190 responden	10% 10% 10%

• D1	192 responden	10%
• D4	187 responden	10%
• S1	198 responden	10%
• S2	200 responden	20%
• S3	201 responden	20%

Berdasarkan tabel 4.3 hasil analisis dari enam artikel didapatkan tiga artikel sebagian besar tingkat pendidikan responden yaitu berpendidikan D3, dan tiga artikel lainnya sebagian besar responden berpendidikan sarjana.

4.2.3. Karakteristik Jenis kelamin responden

Analisa karakteristik jenis kelamin dalam literature review ini, dilihat dari hasil dari jurnal-jurnal yang diambil dapat dilihat pada tabel berikut:

Tabel 4.4 Hasil temuan Jenis Kelamin pada 6 artikel *Literatur Review*

No	Peneliti + tahun	Jenis Kelamin	N	%
1	Erfani et al., (2020)	Laki-laki Perempuan	2.888 responden 5.703 responden	40% 60%
2	Naser et al., (2020)	Laki-laki Perempuan	- 810 responden	- 100%
3	Ferdous et al., (2020)	Laki-laki Perempuan	1.206 responden 811 responden	80% 20%
4	Radovanovi et al., (2020)	Laki-laki Perempuan	228 responden 747 responden	20% 80%
5	Zhong et al., (2020)	Laki-laki Perempuan	2.368 responden 4.542 responden	30% 70%
6	Larasaty, (2019)	Laki-laki Perempuan	747 responden 801 responden	40% 60%

Berdasarkan tabel 4.4 hasil analisis dari enam artikel didapatkan lima artikel sebagian besar responden berjenis kelamin perempuan dan satu artikel sebagian besar responden berjenis kelamin laki-laki.

4.3 Analisis faktor usia dalam mempengaruhi kepatuhan masyarakat pada protocol kesehatan covid-19

Hasil analisa keenam artikel didapatkan lima artikel yang mencantumkan faktor usia dalam mempengaruhi kepatuhan pada protokol kesehatan, sedangkan satu artikel lainnya tidak mencantumkan faktor usia dalam mempengaruhi kepatuhan. Hasil analisis dapat dilihat pada tabel berikut:

Tabel 4.5 Hasil temuan Faktor usia yang mempengaruhi kepatuhan masyarakat pada protokol kesehatan

NO	Nama & Tahun	Usia	%	Kepatuhan (%)		P value
				Patuh	Tidak patuh	
1.	Erfani et al., (2020) Artikel 1	• 21-30 tahun • 31-40 tahun • 41-50 tahun • >50 tahun	20% 29% 35% 16% 10%	90%	10%	0.001
2.	Naser e t al., 2020) Artikel 2	• 30-49 tahun • >50 tahun	60% 40%	80%	20%	0.006
3.	(Ferdous et al., 2020)	• 21-30 Tahun • >30 tahun	70% 30%	75%	25%	0.001

Artikel 3						
4.	Larasaty, 2019)	•21-25 tahun	20%	90%	10%	0.001
		•26-30 tahun	20%			
	Artikel 6	•31-35 tahun	10%			
		•36-40 tahun	10%			
		•41-45 tahun	10%			
		•46-50 tahun	5%			
		•51-55 tahun	10%			
		•56-60 tahun	5%			
		•>60 tahun	10%			
5.	(Radovanovi et al., 2020)	• 21-28 tahun	40%	80%	20%	0,000
		• 29-38 tahun	30%			
	Artikel 4	• 39-48 tahun	20%			
		• 49-58 tahun	10%			

Berdasarkan tabel 4.5 dari lima artikel yang mencantumkan faktor usia dalam mempengaruhi kepatuhan yaitu dari keseluruhan artikel rata-rata faktor usia 21-55 tahun mempengaruhi kepatuhan masyarakat dalam melakukan protocol kesehatan. Rata-rata usia yang memiliki kepatuhan tinggi yaitu usia 21-55 tahun.

4.4 Analisis faktor Jenis kelamin dalam mempengaruhi kepatuhan masyarakat dalam mematuhi protokol kesehatan dimasa pandemic covid – 19.

Hasil analisa keenam artikel didapatkan lima artikel yang mencantumkan faktor jenis kelamin dalam mempengaruhi kepatuhan pada protocol kesehatan, sedangkan satu artikel lainnya tidak mencantumkan faktor jenis kelamin dalam mempengaruhi kepatuhan. Hasil analisis dapat dilihat pada tabel berikut:

Tabel 4.6 Hasil temuan Faktor jenis kelamin yang mempengaruhi kepatuhan masyarakat pada protocol kesehatan

NO	Nama & Tahun	Jenis Kelamin	%	Kepatuhan (%)		P value
				Patuh	Tidak patuh	
1.	Erfani et al., (2020)	Laki-laki	34%	80%	20%	0.001
		Perempuan	66%			
	Artikel 1					
2.	(Ferdous et al., 2020)	Laki-laki	60%	85%	15%	0.003
		Perempuan	40%			
	Artikel 3					
3.	(Zhong et al., 2020)	Laki-laki	34%	90%	10%	0.001
		Perempuan	66%			
	Artikel 5					
4.	Larasaty, 2019)	Laki-laki	14%	80%	20%	0.001
		Perempuan	86%			
	Artikel 6					
5.	Naser et al., 2020	Perempuan	100%	90%	10%	0,000
	Artikel 2					

Berdasarkan tabel 4.6 dari lima artikel yang mencantumkan faktor jenis kelamin dalam mempengaruhi kepatuhan yaitu dari keseluruhan artikel rata-rata berjenis kelamin perempuan, faktor jenis kelamin mempengaruhi kepatuhan masyarakat dalam melakukan protokol kesehatan. Jenis kelamin perempuan lebih patuh terhadap protokol kesehatan.

4.5 Analisis faktor tingkat pendidikan dalam mempengaruhi kepatuhan masyarakat dalam mematuhi protokol kesehatan dimasa pandemic covid – 19.

Hasil analisa keenam artikel didapatkan lima artikel yang mencantumkan faktor pendidikan dalam mempengaruhi kepatuhan pada protocol kesehatan, sedangkan satu artikel lainnya tidak mencantumkan faktor pendidikan dalam mempengaruhi kepatuhan. Hasil analisis dapat dilihat pada tabel berikut:

Tabel 4.7 Hasil temuan Faktor Pendidikan yang mempengaruhi kepatuhan masyarakat pada protocol kesehatan

NO	Nama & Tahun	Pendidikan	%	Kepatuhan (%)		P value
				Patuh	Tidak patuh	
1.	Erfani et al., (2020) Artikel 1	• Tidak Sekolah • Dibawah Diploma • Diploma • Sarjana/ akademik	5% 6% 19% 70%	80%	20%	0.001
2.	(Ferdous et al., 2020) Artikel 3	• SMP • SMA • Sarjana • Pasca sarjana	1% 11% 21% 61%	85%	15%	0.004

3.	Radovanovi, 2020	• SD • D3	20%	80%	20%	0,001
	Artikel 4	• S2	30%			
4.	Zhong, 2020	• SMA • D3 • S1 • S2	10%	70%	30%	0,000
	Artikel 5		20%			
			50%			
			20%			
5.	Larasaty, 2019	• SD • SMP	10%	80%	20%	0,001
	Artikel 6	• SMA • D1 • D2 • D3 • S1 • S2 • S3	10%			
			10%			
			10%			
			20%			
			20%			

Berdasarkan tabel 4.7 dari lima artikel yang mencantumkan faktor pendidikan dalam mempengaruhi kepatuhan yaitu dari keseluruhan artikel rata-rata berpendidikan sarjana, faktor pendidikan mempengaruhi kepatuhan masyarakat dalam melakukan protokol kesehatan. Pendidikan yang dapat mempengaruhi kepatuhan yaitu pendidikan tinggi, dimana responden berpendidikan sarjana karena semakin tinggi tingkat pendidikan seseorang, maka semakin tinggi tingkat kepatuhan terhadap protokol kesehatan.

4.6 Analisis faktor tingkat pengetahuan dalam mempengaruhi kepatuhan masyarakat dalam mematuhi protokol kesehatan dimasa pandemic covid – 19

Hasil analisa keenam artikel didapatkan lima artikel yang mencantumkan faktor tingkat pengetahuan dalam mempengaruhi kepatuhan pada protocol kesehatan, sedangkan dua artikel lainnya tidak mencantumkan faktor tingkat pengetahuan dalam mempengaruhi kepatuhan. Hasil analisis dapat dilihat pada tabel berikut:

Tabel 4.8 Hasil temuan Faktor tingkat pengetahuan yang mempengaruhi kepatuhan masyarakat pada protocol kesehatan

NO	Nama & Tahun	Tingkat pengetahuan	%	Kepatuhan (%)		P value
				Patuh	Tidak patuh	
1.	Erfani et al., (2020) Artikel 1	Rendah Sedang Tinggi	3% 19,1% 77,9%	80%	20%	0.001
2.	Naser et al., 2020) Artikel 2	Baik Rendah	83% 17%	85%	15%	0.015
3.	(Radovanovi et al., 2020) Artikel 4	Baik Rendah	84,6% 15,4%	80%	20%	0.001
4.	(Zhong et al., 2020) Artikel 5	Baik Rendah	65,7% 34,3%	75%	25%	0.001

5.	Larasaty, 2019	Baik Rendah	70% 30%	80%	20%	0,000
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Artikel 6

Berdasarkan tabel 4.8 dari lima artikel yang mencantumkan faktor tingkat pengetahuan dalam mempengaruhi kepatuhan yaitu dari keseluruhan artikel rata-rata tingkat pengetahuan baik, faktor tingkat pengetahuan mempengaruhi kepatuhan masyarakat dalam melakukan protocol kesehatan.

BAB 5

PEMBAHASAN

5.1 Menganalisis faktor usia dalam mempengaruhi kepatuhan masyarakat dalam mematuhi protokol kesehatan dimasa pandemic covid – 19.

Berdasarkan hasil analisis dari enam artikel didapatkan lima artikel yang mencantumkan faktor usia dalam mempengaruhi kepatuhan (Erfani et al., 2020; Naser et al., 2020; Ferdous et al., 2020; Larasaty, 2019; Radovavino, 2020) yaitu dari keseluruhan artikel rata-rata faktor usia mempengaruhi kepatuhan masyarakat dalam melakukan protocol kesehatan. Sedangkan satu artikel tidak mencantumkan faktor usia dalam mempengaruhi kepatuhan (Zhong et al., 2020). Rata-rata usia yang memiliki kepatuhan tinggi yaitu usia 21-55 tahun.

Berdasarkan teori menyatakan bahwa usia berhubungan dengan tingkat kepatuhan, meskipun terkadang usia bukan menjadi penyebab ketidakpatuhan, namun semakin tua usia, maka akan semakin menurun daya ingat, pendengaran, dan penglihatan, sehingga akan membuat seseorang tidak patuh (Notoatmodjo, 2010). Jika usia seseorang dibawah 40 tahun, maka seseorang tersebut memiliki kesadaran yang tinggi untuk mematuhi protocol kesehatan yang sudah ditentukan (Riyadi, 2019). Tingkat kematangan dan kekuatan seseorang akan lebih matang dalam berpikir dan bekerja seiring dengan bertambahnya usia. Dari segi kepercayaan, masyarakat lebih mempercayai orang yang lebih dewasa daripada orang yang belum cukup tinggi tingkat kedewasaannya. Hal ini berkaitan dengan

pengalaman dan kematangan jiwanya. Semakin dewasa seseorang, maka cara berpikir semakin matang. Usia memiliki pengaruh besar dalam kepatuhan seseorang dalam menjalankan protocol kesehatan, karena usia dapat meningkatkan motivasi seseorang untuk hidup lebih sehat.

Peneliti berasumsi bahwa dari enam artikel yang didapatkan lima artikel mencantumkan faktor usia dalam mempengaruhi kepatuhan, rata-rata dari lima artikel usia responden yaitu 21-55 tahun, usia tersebut merupakan usia dewasa akhir, dimana responden dengan usia yang tidak terlalu tua akan memiliki kesadaran dalam kepatuhan terutama mematuhi protokol kesehatan di masa pandemic covid-19. Di usia 21-55 tahun seseorang masih memiliki daya ingat, pendengaran, dan penglihatan yang normal. Usia merupakan faktor yang mempengaruhi kepatuhan seseorang dalam mematuhi protokol kesehatan, semakin muda usia seseorang maka semakin tinggi kesadaran untuk mematuhi protokol kesehatan, jika semakin tua usia seseorang maka rendah sekali kesadar untuk mematuhi protokol kesehatan.

5.2 Menganalisis faktor Jenis kelamin dalam mempengaruhi kepatuhan masyarakat dalam mematuhi protokol kesehatan dimasa pandemic covid – 19.

Berdasarkan hasil analisis dari enam artikel didapatkan lima artikel yang mencantumkan faktor jenis kelamin dalam mempengaruhi kepatuhan yaitu dari keseluruhan artikel rata-rata berjenis kelamin perempuan, faktor jenis kelamin mempengaruhi kepatuhan masyarakat dalam melakukan protocol kesehatan. Dengan nilai P value < 0,05 (Erfani et al., 2020; Ferdous et al., 2020; Zhong et al., 2020; Larasaty, 2019; Naser, 2020).

Berdasarkan teori menyatakan bahwa Jenis kelamin juga mempengaruhi kepatuhan, dalam hal ini seorang perempuan yang memiliki sifat penuh kasih sayang, merasa bertanggung jawab terhadap kesejahteraan orang disekitarnya. Sedangkan seorang laki-laki cenderung memiliki sifat agresif, senang berpetualang, dan berani mengambil resiko. Dalam konteks ini resiko yang ada salah satunya yaitu resiko tertular suatu penyakit. Sehingga adanya perbedaan sifat yang dimiliki laki-laki dan perempuan, perempuan cenderung lebih takut untuk melanggar peraturan. Lippa dalam Suhardin (2016) mengatakan bahwa laki-laki memiliki kepribadian yang agresif, sombong, kompetitif, kasar, kejam, dominan, independen dan tidak emosional sedangkan perempuan lebih mesra, cemas, penuh kasih, bergantung, emosional, lembut, sensitif dan tunduk. Kepribadian yang dimiliki perempuan itulah yang nampaknya membuat perempuan lebih peduli dengan kesehatan dibandingkan laki-laki sehingga kepatuhan dalam mematuhi protokol kesehatan lebih banyak didapatkan pada perempuan (Riyadi, 2021). Beberapa penelitian lain juga menyatakan bahwa perempuan lebih patuh terhadap kebijakan, seperti pada penelitian Nuqul yang menyatakan bahwa perempuan memiliki intensitas kepatuhan terhadap peraturan lebih tinggi dibanding laki-laki (Wiranti, 2020).

Peneliti berasumsi bahwa dari enam artikel yang didapatkan lima artikel mencantumkan faktor jenis kelamin. Sebagian besar dari lima artikel jenis kelamin responden yaitu perempuan. Dimana seorang perempuan cenderung memiliki sifat waspada dan juga seorang perempuan memiliki

kepatuhan yang tinggi daripada laki-laki. Seorang perempuan memiliki sifat yang peduli terhadap diri sendiri dan lingkungan, sehingga perempuan lebih memiliki sifat yang patuh untuk menjaga kesehatannya dibandingkan seorang laki-laki.

5.3 Menganalisis faktor tingkat pendidikan dalam mempengaruhi kepatuhan masyarakat dalam mematuhi protokol kesehatan dimasa pandemic covid – 19.

Berdasarkan hasil analisis dari enam artikel didapatkan lima artikel yang mencantumkan faktor pendidikan dalam mempengaruhi kepatuhan yaitu dari keseluruhan artikel rata-rata berpendidikan sarjana, faktor pendidikan mempengaruhi kepatuhan masyarakat dalam melakukan protokol kesehatan. Dengan nilai P value < 0,05 (Erfani et al., 2020; Ferdous et al., 2020; Radovavini, 2020; Zhong, 2020; Larasaty, 2019).

Berdasarkan teori menyatakan bahwa Pendidikan adalah usaha sadar dan terencana untuk mewujudkan suasana belajar dan proses pembelajaran agar peserta didik secara aktif mengembangkan potensi dirinya untuk memiliki kekuatan spiritual keagamaan, pengendalian diri, kepribadian, kecerdasan, akhlak mulia, serta keterampilan yang diperlukan dirinya, masyarakat, bangsa, dan negara. Pendidikan klien dapat meningkatkan kepatuhan, sepanjang bahwa pendidikan tersebut merupakan pendidikan yang aktif. Dapat diartikan bahwa tingkat pendidikan akan membentuk pengetahuan seseorang yang kemudian akan meningkatkan perilaku patuh. teori S. Nasution, tingkat pendidikan mempengaruhi tinggi rendahnya pengetahuan seseorang. Pada penelitian yang telah dilakukan oleh Pradono

menunjukkan bahwa perubahan perilaku hidup sehat ditentukan salah satunya oleh tingkat pendidikan. Sehingga pendidikan memang memiliki peran penting dalam pembentukan perilaku. Dapat diartikan bahwa tingkat pendidikan akan membentuk pengetahuan seseorang yang kemudian akan meningkatkan perilaku patuh (Wiranti, 2020).

Peneliti berasumsi bahwa dari keseluruhan artikel rata-rata tingkat pendidikan responden yaitu sarjana. Dimana pendidikan sarjana ini merupakan pendidikan yang dikategorikan pendidikan tinggi. Dari keseluruhan artikel menyatakan bahwa tingkat pendidikan merupakan faktor yang mempengaruhi kepatuhan seseorang dalam mematuhi protokol kesehatan covid – 19. Tingkat pendidikan seseorang dapat mempengaruhi kepatuhan, karena semakin rendah tingkat pendidikan seseorang dapat berpengaruh pada pola pikir dan daya serap saat menerima informasi.

5.4 Menganalisis faktor tingkat pengetahuan dalam mempengaruhi kepatuhan masyarakat dalam mematuhi protokol kesehatan dimasa pandemic covid – 19

Berdasarkan hasil analisis dari enam artikel didapatkan dari lima artikel yang mencantumkan faktor tingkat pengetahuan dalam mempengaruhi kepatuhan yaitu dari keseluruhan artikel rata-rata tingkat pengetahuan baik, faktor tingkat pengetahuan mempengaruhi kepatuhan masyarakat dalam melakukan protokol kesehatan. Dengan nilai P value < 0,05 (Erfani et al., 2020; Naser et al., 2020; Radovanovi et al., 2020; Zhong et al., 2020; Larasaty, 2019).

Berdasarkan teori menyatakan bahwa pengetahuan merupakan salah satu hal yang penting diperhatikan dalam rangka penanganan khususnya dalam mencegah transmisi penyebaran dan menekan penyebaran virus (Law, Leung, & Xu, 2020). Pengetahuan yang dimiliki ini akan mempengaruhi seseorang dalam menentukan dan mengambil keputusan terhadap suatu permasalahan yang dihadapi (Purnamasari, Ika; Raharyani, 2020). hal ini terbukti pada hasil penelitian dimana mayoritas masyarakat yang memiliki pengetahuan tinggi lebih patuh terhadap protokol kesehatan covid 19. Menurut fungsinya pengetahuan merupakan dorongan dasar untuk ingin tahu, untuk mencari penalaran, dan untuk mengorganisasikan pengalamannya. Semakin tinggi tingkat pengetahuan, semakin baik pula tingkat kepatuhan (Notoatmodjo, 2010). Pengetahuan itu sendiri dipengaruhi oleh faktor pendidikan formal. Pengetahuan sangat erat hubungannya dengan pendidikan, dimana diharapkan bahwa dengan pendidikan yang tinggi maka orang tersebut akan semakin luas pula

pengetahuannya. Akan tetapi perlu ditekankan, bukan berarti seseorang yang berpendidikan rendah mutlak berpengetahuan rendah pula (Novi, 2021).

Peneliti berasumsi bahwa dari keseluruhan artikel menunjukkan rata-rata tingkat pengetahuan responden yaitu termasuk kategori baik. Tingkat pengetahuan ini merupakan faktor yang dapat mempengaruhi kepatuhan. Jadi jika seseorang memiliki tingkat pengetahuan yang baik maka orang tersebut akan memiliki kesadaran untuk mematuhi protocol kesehatan, sedangkan jika seseorang memiliki tingkat pengetahuan yang rendah maka dapat dipastikan orang tersebut memiliki kepatuhan yang rendah dan tidak memiliki kesadaran untuk mematuhi protocol kesehatan. Tingkat pengetahuan seseorang dapat mempengaruhi kepatuhan hal ini disebabkan oleh semakin tinggi tingkat pengetahuan seseorang untuk mendapat informasi maka semakin tinggi tingkat kepatuhan, sedangkan semakin rendah tingkat pengetahuan seseorang dalam mendapatkan informasi, maka semakin rendah kepatuhan yang dimiliki seseorang.

BAB 6

KESIMPULAN DAN SARAN

6.1 Kesimpulan

Dilihat dari analisa hasil *literature review* pada 6 jurnal yang didapatkan peneliti, maka dapat disimpulkan hasil *literature review* sebagai berikut:

- 6.1.1 Analisis dari enam artikel didapatkan lima artikel yang mencantumkan faktor usia dalam mempengaruhi kepatuhan yaitu dari keseluruhan artikel rata-rata faktor usia mempengaruhi kepatuhan masyarakat dalam melakukan protokol kesehatan. Sedangkan satu artikel tidak mencantumkan faktor usia dalam mempengaruhi kepatuhan. Usia yang mempengaruhi kepatuhan yaitu rata-rata usia 21-55 tahun dimana diusia tersebut tidak terlalu tua, dan seseorang masih memiliki daya ingat, pendengaran dan penglihatan yang normal.
- 6.1.2 Hasil analisis dari enam artikel didapatkan lima artikel yang mencantumkan faktor jenis kelamin dalam mempengaruhi kepatuhan yaitu dari keseluruhan artikel rata-rata berjenis kelamin perempuan, faktor jenis kelamin mempengaruhi kepatuhan masyarakat dalam melakukan protocol kesehatan.

6.1.3 Hasil analisis dari enam artikel didapatkan lima artikel yang mencantumkan faktor pendidikan dalam mempengaruhi kepatuhan yaitu dari keseluruhan artikel rata-rata berpendidikan sarjana, faktor pendidikan mempengaruhi kepatuhan masyarakat dalam melakukan protokol kesehatan, karena pendidikan tinggi tingkat pemahaman dari informasi yang didapat lebih baik proses penalarannya juga lebih baik.

6.1.4 Hasil analisis dari enam artikel didapatkan dari lima artikel yang mencantumkan faktor tingkat pengetahuan dalam mempengaruhi kepatuhan yaitu dari keseluruhan artikel rata-rata tingkat pengetahuan baik, faktor tingkat pengetahuan mempengaruhi kepatuhan masyarakat dalam melakukan protokol kesehatan, karena orang yang berpengetahuan baik, tahu kemanfaatan serta dampak yang ditimbulkan jika tidak patuh terhadap protokol kesehatan.

6.2 Saran

Berdasarkan hasil analisa pada *literature review* diatas, maka peneliti memberikan beberapa saran kepada:

1. Peneliti

Hasil *literature review* ini agar menjadi suatu tambahan pengetahuan dan dapat diimplementasikan dalam melakukan asuhan keperawatan pada komunitas tentang bagaimana cara meningkatkan

tingkat kepatuhan masyarakat dalam menjalankan protocol kesehatan di masa pandemic covid-19.

2. Masyarakat

Adanya hasil literature review ini agar masyarakat yang mempunyai tingkat kepatuhan yang kurang baik agar supaya mengetahui dampak dan bahaya melanggar protocol kesehatan covid-19.

3. Institusi pendidikan Keperawatan

Hasil penelitian ini agar bisa berkontribusi dalam memberikan tambahan referensi dan dijadikan gambaran untuk membuat teori tentang meningkatkankepatuhan masyarakat dalam menjalankan protocol kecehatan covid-19.

4. Peneliti Selanjutnya

Hasil penelitian ini agar menjadi bahan tambahan untuk menganalisa lebih jauh lagi akan analisa faktor yang mempengaruhi tingkat kepatuhan masyarakat dalam mematuhi protocol kesehatan covid-19.

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Lampiran 1.

Title: Knowledge, Attitude and Practice toward the Novel Coronavirus (COVID-19) Outbreak: A Population-Based Survey in Iran

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DISCLAIMER

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Abstract

Background: Knowledge and awareness of mode of disease transmission, basic hygiene principles and measures in public health crisis are vitally important for developing effective control measures. This study was conducted to evaluate the knowledge, attitude, and practice (KAP) of Iranians at the time of COVID-19 pandemic to detect related associated sociodemographic variables.

Methods: In this cross-sectional, web-based survey, conducted among the general population of Iran above 15 years of age, a series of questions regarding the KAP of the population about COVID-19 was asked, and participants' demographic characteristics and source of information regarding COVID-19 were recorded and analyzed.

Results: Among a total of 8591 participants, the overall achieved knowledge score regarding COVID-19 characteristics was 90% with 60.8% of the general population having moderate knowledge towards the disease. Also, an overall score of 85% was achieved regarding the knowledge of the mode of transmission and groups at higher risk of COVID-19. Regarding the attitude towards and practice of COVID-19, an overall score of 90% and 89% of the total score were achieved among the given population. The result showed a significant correlation between female gender, higher age, and higher education with knowledge, attitude, and practice. Based on multiple linear regression analysis, male gender, non-healthcare related professions, single, and lower level of education were significantly associated with lower knowledge scores.

Conclusion: Our findings suggest that Iranian population demonstrated decent knowledge, appropriate practice, and positive attitude towards COVID-19 at the time of its outbreak.

Keywords: Knowledge, Attitude, Practice, COVID-19, Iran

1. Introduction

The novel Coronavirus (2019-nCoV, officially known as SARS-CoV-2 or COVID-19) was first reported in December 2019, as a cluster of acute respiratory illness in Wuhan, Hubei Province, China, from where it spread rapidly to over 198 countries. It was declared as a global pandemic by WHO on 12th March 2020 (1, 2). The outbreak of coronavirus in Iran was officially confirmed to be in Qom on February 19, 2020 (3-5). However, previously suspected cases of coronavirus have been reported in Iran (6). As of 26th of March 2020, over half a million cases of COVID have been reported with a death toll of over 23,000 patients. Among the top ranking countries, Iran was reported to be in the sixth position with over 29,000 confirmed cases and over 2,200 deaths (7, 8).

In order to introduce and install effective control measures, having knowledge about basic hygiene principles and modes of disease transmission, and measures in such an environment is, therefore, of vitally importance. To achieve an ultimate success against the ongoing encounter against COVID-19 in Iran, people's commitment to these control measures is necessary. According to the KAP theory, this is generally affected by their knowledge, attitude, and practices (KAP) concerning COVID-19 (9, 10). Health authorities in Iran have made substantial efforts to control the disease through various measures. Public education is considered as one of the most important measures that can help control the diseases, as has been the case regarding SARS (11).

The main goal of the present study was to measure the level of knowledge, attitude, and practice concerning COVID-19, to detect sociodemographic variables associated with a satisfactory level of them and to explore awareness and health behaviors related to the prevention of Coronavirus.

2. Methods and Material

2.1 Study design

This study was designed as a cross-sectional web-based survey. The estimation of the sample size was done by assuming a minimum prevalence of 22%, confidence level = 95%, and d (margin of error) = 0.01. The calculated sample size of this study was 6592 participants, and with design effect = 1.2 reaching a sample size of nearly 8,000 participants.

2.2. Questionnaire preparation

For the purpose of this study, a questionnaire which was developed by WHO training material for the detection, prevention, response, and control of COVID-19 was used, and subsequently pilot tested. Before the final survey was completed, changes were made as required to enable better understanding of the questions by the participants, and the arrangement of the questions was looked into to ensure its efficiency. Finally, a 76-item survey instrument was developed using WHO course materials on emerging respiratory viruses, including COVID-19 (12) (Supplementary table 1). This took approximately 13 minutes to fill out.

2.3. Data Collection

This web-based survey was carried out through various social media platforms. Through the link the participants could view the questions simply by clicking on it and answer the questions. The cover page of the questionnaire included a short introduction regarding the objectives, procedures, the voluntary nature of participation, declarations of confidentiality and anonymity. The inclusion criteria regarded Iranian nationality participants aged 15 years and above who would understand the content of the survey and agree to participate in the survey.

The questionnaire was answered by over 8500 participants anonymously from the 2nd to the 8th of March 2020. Demographic variables were recorded along with other factors regarding the populations' knowledge, attitude, practice, and risk assessment concerning COVID-19.

2.4 Knowledge about COVID-19

The knowledge section of the questionnaire consisted of two parts (Supplementary Table 1): the first had 18 questions: 6 regarding the characteristics of the disease (K1-K6), 6 about the symptoms of the disease (K7 – K12), and 6 regarding the prevention and control of the disease (K13-K18). These questions were either in the form of a multiple choice answer or in the form of true, false, or no opinion. Correct answers had 3 points, while incorrect answers were allocated 1 point. A “no opinion” answer had 2 points. Eventually, the overall knowledge score ranged from 18 to 54. Individuals scoring 46 and under were categorized as having low knowledge, 47 to 50 as having moderate knowledge, and above 50 as enjoying high knowledge of COVID-19.

Furthermore, an additional eight questions (K19-K26), four regarding the transmission route of the disease and 4 about the groups at potential higher risk were asked from the participants. These questions were answered on a true or false basis, with true having 1 point and false 0 point. The overall knowledge score of this section ranged from 0 to 8, with a total score of under 5 as low knowledge, 5 to 7 as moderate knowledge and 8 as high knowledge regarding the transfer routes and risk groups of COVID-19.

2.5 Attitude towards COVID-19

To evaluate the attitude of the general public towards the disease, 15 questions were asked (A1-A15, supplementary table 1). The answering and scoring systems were similar to the first section which was about knowledge (true=3, false = 1, and no opinion =2). The total attitude score ranged from 15 to 45. A score of under 40, 40 to 43, and above 43 was classified as low, moderate, and high attitude towards COVID-19, respectively.

2.6 Practice regarding COVID-19

Regarding the general population's practice and approach towards the disease, 12 questions were asked (P1-P15, Supplementary Table 1), with a similar scoring system as previous (correct = 3,

incorrect = 1, no opinion = 2). Total scores of under 29, 29 to 34, and above 34 were classified as a weak, moderate, and strong practice towards COVID-19, respectively.

2.7 Source of information regarding COVID-19

Finally, the source of the individuals' information about COVID-19 was recorded. It included social media and the internet, news media (TV/video, magazines, newspapers, and radio), family and friends, scientific journals and articles, as well as health-care providers such as physicians and nurses. Participants rated each source of information and their reliability from 1 to 5. Scores ≥ 3 were categorized as considerable for both reliability and usage.

2.8 Statistical analysis

All the statistical analyses were performed by using statistical package for social sciences (SPSS Inc., Chicago, Illinois, USA) version 26.0. Data were presented as mean $\pm$ SD and proportions as appropriate. The Chi-square test or Fisher's exact test was used to compare categorical data. Univariate followed by multivariate linear regression analyses were used to determine the relation between variables and KAP in our study in which were nominated by backward stepwise method. Unstandardized regression coefficients (95%) was for evaluating correlation among variables with KAP towards COVID-19. The statistical significance level was set at $p < 0.05$.

3. Results

3.1 Demographic information

In our study, 8591 filled questionnaires were received from the participants. The mean age of participants was 34.37 years old (SD = 11.25; ranged, 15 - 87). Also, 1950 (22.7%) of the participants had a history of traveling in the last month. Table 2 shows the demographic characteristics of the participants.

3.2 Knowledge of COVID-19

The questions regarding the knowledge of the participants about COVID-19 was divided into two sections, one regarding their knowledge about the characteristics of the disease (Knowledge Test A) and the other regarding what they knew about the transmission routes and groups at higher risk for the disease (Knowledge Test B). Based on our results, the majority of the general population had moderate knowledge about the disease (46.5% for Knowledge Test A and 56.2% for Knowledge Test B). The mean knowledge score was 48.8 and 6.8, suggesting an overall 90% and 85% correct rate for knowledge A and B tests, respectively (Table 1). Knowledge scores of our study (both A and B) were considerably variable among age groups, genders, marital status, occupation, education levels, and the number of individuals living together. However, regarding the living place of the individuals, only the knowledge B test had a significant correlation (Table 2). Based on multiple linear regression analysis, being male, having non-healthcare related professions, being single, and having lower level of education were significantly associated with lower scores in knowledge A and B tests ($P < 0.01$). Furthermore, the participants' age was only significantly associated with lower knowledge test A ($P < 0.001$) (Table 3).

3.3 Attitude towards COVID-19

The mean correct answer score of the 15 questions regarding the attitude towards COVID-19 rate was 40.6 (SD=2.4, rang 15-45), suggesting an overall 90% correct rate in this test. The majority of the participants (60.8%) had a moderate attitude towards COVID-19. Attitude scores significantly varied across age groups, genders, occupations, marital status, education levels, living places, and the number of individuals living together (Table 2). Multiple linear regression analysis showed that age, being male, having lower level of education, being single, and having a higher number of household were significantly associated with having lower attitude towards COVID-19 ($P < 0.01$) (Table 3).

3.4 Practice towards COVID-19

Based on our results, the average correct answer score of the 12 questions regarding the rate of the COVID-19 practice was 32.1 (SD=2.9, ranged 12-36), suggesting an overall 89% correct rate in the practices test. The majority of participants (71.3%) had moderate practice towards COVID-19. Practice scores significantly varied across genders, age groups, occupations, marital status, education levels, living places, and the number of individuals living together (Table 2). Multiple linear regression analysis showed that age, male gender, being single, having health-care-related occupations and lower level of education were significantly associated with lower practice (Table 3).

Table 1. Number of questions, range, scores and levels of knowledge, attitude, and practice regarding COVID-19 in the general Iranian population

Variables	Number of Questions	Range of score	Total score (mean $\pm$ SD)	Level (%), <i>N</i> =8,591		
				Poor	Moderate	Excellent
Knowledge A	18	18 - 54	48.83 $\pm$ 3.3	22.6	46.5	30.9
Knowledge B	8	0 - 8	6.68 $\pm$ 1.60	9	56.2	34.7
Attitude	15	15 - 45	40.60 $\pm$ 2.4	31.4	60.8	7.8
Practice	12	12 - 36	32.10 $\pm$ 2.9	11.9	71.3	16.7

Based on our data and the scores of the participants' KAP towards COVID-19, there was a significant association among the participants' knowledge, attitude, and practice ($P<0.001$). (Figure 1).

Table 2. Correlation of demographic characteristics and the knowledge test A, knowledge test B, Attitude and practice scores of COVID-19 based on univariate analysis.

Characteristics		Number (%)	Mean $\pm$ Standard deviation							
			Knowledge A	P	Knowledge B	P	Attitude	P	Practice	p
Sex	Male	2,888 (33.6)	48.54 $\pm$ 3.5	<0.001	6.57 $\pm$ 1.6	<0.001	40.46 $\pm$ 2.5	<0.001	31.40 $\pm$ 3.3	<0.001
	Female	5,703 (66.4)	48.98 $\pm$ 3.2		6.74 $\pm$ 1.6		40.67 $\pm$ 2.4		32.46 $\pm$ 2.8	
Age group (years)	≤ 20	894 (10.4)	47.39 $\pm$ 3.5	<0.001	6.44 $\pm$ 1.7	<0.001	39.61 $\pm$ 2.6	<0.001	30.99 $\pm$ 3.5	<0.001
	21 - 30	2,533 (29.5)	48.53 $\pm$ 3.3		6.71 $\pm$ 1.5		40.46 $\pm$ 2.4		31.74 $\pm$ 3.1	
	31 - 40	2,978 (34.7)	49.01 $\pm$ 3.1		6.74 $\pm$ 1.6		40.79 $\pm$ 2.3		32.36 $\pm$ 2.8	
	41 - 50	1,351 (15.8)	49.55 $\pm$ 3.1		6.74 $\pm$ 1.6		40.87 $\pm$ 2.3		32.71 $\pm$ 2.6	
	≥ 50	820 (9.6)	49.60 $\pm$ 3.3		6.60 $\pm$ 1.6		40.99 $\pm$ 2.3		32.57 $\pm$ 2.7	
Occupation	Healthcare-related	6,817 (20.6)	49.65 $\pm$ 3.4	<0.001	6.59 $\pm$ 1.7	<0.001	40.58 $\pm$ 2.4	<0.001	32.18 $\pm$ 3.1	0.046
	Non-healthcare-related	1,774 (79.4)	48.62 $\pm$ 3.0		7.06 $\pm$ 1.2		40.70 $\pm$ 2.4		31.81 $\pm$ 2.6	
Marital status	Single	3,544 (41.3)	48.32 $\pm$ 3.4	<0.001	6.62 $\pm$ 1.7	0.003	40.30 $\pm$ 2.5	<0.001	31.53 $\pm$ 3.3	<0.001
	Married	5,047 (58.7)	48.19 $\pm$ 3.2		6.06 $\pm$ 1.7		40.81 $\pm$ 2.3		32.51 $\pm$ 3.7	
Number of household	≤ 4	7,109 (82.7)	48.88 $\pm$ 3.2	0.003	6.69 $\pm$ 1.6	<0.001	40.67 $\pm$ 2.4	<0.001	32.15 $\pm$ 2.9	0.003
	≥ 5	1,482 (17.3)	48.59 $\pm$ 3.5		6.63 $\pm$ 1.7		40.38 $\pm$ 2.5		31.88 $\pm$ 3.3	
Level of education	Illiterate	12 (0.1)	45.50 $\pm$ 4.4	<0.001	5.25 $\pm$ 2.7	<0.001	38.58 $\pm$ 2.8	<0.001	29.25 $\pm$ 5.8	<0.001
	Under diploma	536 (6.2)	47.21 $\pm$ 4.1		6.05 $\pm$ 2.1		39.77 $\pm$ 2.9		31.44 $\pm$ 3.5	
	Diploma	1,590 (18.5)	48.38 $\pm$ 3.5		6.45 $\pm$ 1.8		40.39 $\pm$ 2.5		32.06 $\pm$ 3.2	
	Academic	6,453 (75.1)	49.09 $\pm$ 3.1		6.80 $\pm$ 1.5		40.73 $\pm$ 2.3		32.18 $\pm$ 2.9	
Living place	Apartment	5,164 (60.1)	48.90 $\pm$ 3.2	0.082	6.71 $\pm$ 1.6	0.013	40.69 $\pm$ 2.3	<0.001	32.25 $\pm$ 2.8	<0.001
	House, Villa	3,238 (37.7)	48.74 $\pm$ 3.4		6.63 $\pm$ 1.7		40.48 $\pm$ 2.5		31.95 $\pm$ 3.2	
	Dorm	189 (2.2)	48.70 $\pm$ 3.5		6.88 $\pm$ 1.4		40.22 $\pm$ 2.8		30.68 $\pm$ 3.6	

Table 3. Multivariate linear regression of association between demographic characteristics with knowledge A, knowledge B, Attitude and practice scores of COVID-19 in Iranian population

Variables	Knowledge A			Knowledge B			Attitude			Practice		
	Unstandardized coefficient (95%)	P	VIF*	Unstandardized coefficient (95%)	P	VIF	Unstandardized coefficient (95%)	P	VIF	Unstandardized coefficient (95%)	P	VIF
Age (Year)	0.040 (0.033 to 0.047)	<0.001	1.412	0.002 (-0.006 to 0.001)	NS	1.412	0.021 (0.016 to 0.027)	<0.001	1.412	0.030 (0.023 to 0.036)	<0.001	1.412
Sex (Male/Female)	-0.428 (-0.571 to -0.286)	<0.001	1.007	-0.155 (-0.226 to -0.084)	<0.001	1.007	-0.229 (-0.335 to -0.122)	<0.001	1.007	-1.098 (-1.227 to -0.969)	<0.001	1.007
Job (Non-health-related/Health-related)	-0.900 (-1.070 to -0.729)	<0.001	1.058	-0.380 (-0.465 to -0.295)	<0.001	1.058	-0.038 (-0.165 to 0.089)	NS	1.058	0.437 (0.282 to 0.592)	<0.001	1.058
Marital status (Single/Married)	-0.371 (-0.533 to -0.208)	<0.001	1.422	-0.109 (-0.190 to -0.028)	<0.01	1.422	-0.188 (-0.309 to -0.066)	0.002	1.422	-0.526 (-0.673 to -0.378)	<0.001	1.422
Level of education	0.599 (0.480 to 0.717)	<0.001	1.078	0.307 (0.248 to 0.366)	<0.001	1.078	0.354 (0.266 to 0.443)	<0.001	1.078	0.238 (0.131 to 0.345)	<0.001	1.078
Living place (Apartment/House)	0.050 (-0.092 to 0.192)	NS**	1.057	-0.024 (-0.095 to 0.046)	NS	1.057	-0.060 (-0.167 to 0.046)	NS	1.057	-0.120 (-0.249 to 0.009)	NS	1.057
Number of household (≥ 5 / ≤ 4)	-0.014 (-0.198 to 0.170)	NS	1.069	-0.008 (-0.100 to 0.083)	NS	1.069	-0.230 (-0.367 to -0.093)	0.001	1.069	-0.015 (-0.182 to 0.152)	NS	1.069

* Variance inflation factor

** Not significant

showed an overall correct rate of 90% knowledge among the Chinese; however, a lower knowledge regarding the transmission routes and groups at higher risk was achieved among the general population of Iran (85% for knowledge test B).

The high correct answer rate regarding knowledge about COVID-19 among Iranian population has its roots partly in their high exposure to the information provided by the government and media about the virus since the start of the outbreak. Another reason could be the fact that 75.1% of the participants held an academic degree and responded actively to the severe condition of the pandemic and the overwhelming news reports, by collecting information from reliable sources. This is supported by the considerably positive correlation between the level of education and knowledge regarding COVID-19, and is similar to the results of other studies in this regard (13).

Compared to a study about KAP towards COVID-19 among the bordered population of northern Thailand in the early period of the outbreak, Iranians under study here, demonstrated higher KAP towards COVID-19 (14). In Thailand, 73.4% had poor knowledge of disease prevention and control; while in our study (22.6% showed poor knowledge in test A, and 9% demonstrated low knowledge in test B. Furthermore, 28.5% had poor attitude towards disease prevention and control; whereas, in our study 31.4% had poor attitude towards COVID-19. In Thailand only 13.6% had proper skills to prevent and control the disease; while in Iran 16.7% showed excellent practice score in our study. The underlying reason for these score differences could be the period and the place in which the two studies were conducted. While in Iran, the study was done at the time of the main phase of the outbreak when the population were exposed to a lot of information about the disease, its route transmission and prevention ways, in Thailand the study was done on the population of a place which was not seriously affected by the outbreak.

Furthermore, our study showed that higher knowledge score regarding COVID-19 was significantly associated with a higher likelihood of having positive attitude and good practice at the time of COVID-19 pandemic. These results show the significance of improving general

population's knowledge regarding COVID-19 by health education programs which, in turn, would enhance their attitude and practice regarding COVID-19. Our findings of the demographic variables related to KAP concerning COVID-19 are mostly similar to previous KAP studies regarding SARS and COVID-19 in China (13, 15). Based on these findings, in order to improve health education support programs regarding the knowledge about COVID-19, more targeted approaches for certain demographic groups such as single men, young people and those with lower education are required.

Our study showed that the majority of participants (82.9%) obtained their information from social media and internet. Also, there was a significant correlation between having higher knowledge of the disease and healthcare workers whose source of information was social media as well as scientific articles and journals. In this regard, healthcare-related professionals should carefully evaluate COVID-19-related information and use scientific and authentic materials as their source of information.

Zhou et al., via sensitivity analysis suggested that, during the early phase of the COVID-19 outbreak, enhancing the response rate of the media reporting the severity of COVID-19, as well as increasing the response rate of the public awareness to the media reports, both can significantly bring forward the peak time and reduce the peak size of the infection. These findings suggested that besides improving medical helps, media coverage can be considered as an effective way to mitigate the disease spreading during the initial stages of an outbreak (16).

The overall attitude score towards COVID-19 was 90% among the Iranian population under study here. This was significantly lower among young, single, and male individuals with lower education and living among more crowded households. Based on the questionnaire results, the majority of participants agreed with having quarantine, locking down cities, restricting travel, and closing educational centers and religious cites (96%, 96.8%, 99.3%, and 98.5%, respectively). Previous experience with the SARS virus showed that extensive implementation of traditional public health

measures in the absence of vaccines and antiviral treatment completely interrupt human-to-human transmission and eradicated the virus. In this closely related virus, taking such measures are necessary to prevent the person-to-person spread of disease by separating people to interrupt transmission and to curb the epidemic of this respiratory disease. The tools we have at hand are isolation and quarantine, social distancing and community containment. All these tools are currently being employed at an unprecedentedly massive scale in China (17). However, in spite of the association between higher attitudes with higher practice in our study, only 85% of the residents avoid leaving their houses. Further implantation and encouragement from the government is required for the transforming of these well-adjusted attitudes into suitable practice.

Based on the overall practice score (89%), most of the participants took precautions to avoid contamination by COVID-19. These could be primarily attributed to the vast broadcasting by the government and the good knowledge considering the high infectivity and easy transmission of COVID-19 virus through droplets. However, these scores were lower than those of practice towards COVID-19 among Chinese residents (13). Unfortunately, the present study still showed that 25% did not wear masks in public places and 9.6% didn't limit their commuting at the time of the outbreak. These potentially unsafe practices were associated with male gender, older age, lower education, marital being single, and poor COVID-19 knowledge. This is also supported by previous studies suggesting that men and late adolescents are more likely to engage in risk-taking behaviors (18-20).

Among the strengths of our study, one can name the significant number of participants during the early days of this public health emergency, with an over-representation of females and higher-educated individuals. Since educational attainment and occupation are frequently considered as proxy measures of socioeconomic status (21), our results can only be comprehensive to relatively high socioeconomic status, particularly female Iranians. Also, it should be kept in mind that the large sample size in our study accounts for its being statistically significant; nevertheless it might

not be the case in practice. Another limitation is that since the COVID-19 can be transmitted via droplets or close contacts, a web-based survey was chosen to decrease the chances of transmission; however, some biases such as lack of internet access and illiteracy affected the results.

Conclusion

To conclude, our findings suggest that general Iranian general population, demonstrated good knowledge, positive attitudes, and reasonable practice regarding COVID-19 during the outbreak. Furthermore, based on the significant positive association among knowledge, attitude, and practice in our study, health education programs, particularly targeting lower knowledge individuals regarding COVID-19, are essential for encouraging positive attitude and maintain safe practices. Hopefully, by increasing knowledge via public health policy-makers, and the cooperation of the Iranian authorities and the general population, optimistic control and elimination of the disease can be anticipated.

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Ethical approval of the study

The present study was approved by the Medical Ethics Committee of Shiraz University of Medical Sciences (code number: IR.sums.med.rec.1398.669). The purpose of this research was explained to the participants and were assured of confidentiality by the researcher

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Article title: "Knowledge and practices towards COVID-19 during its outbreak: a multinational cross-sectional study".

Short-running title: "Knowledge and practices towards COVID-19"

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ABSTRACT

Background: The emergence of COVID-19 globally coupled with its unknown aetiology and its high transmission rate has created an unprecedented state of emergency worldwide. Public knowledge and awareness about COVID-19 are essential in suppressing its pandemic status.

Method: A cross-sectional study using an online survey was conducted between 19th of March and 6th of April 2020 in three Middle Eastern countries (Jordan, Saudi Arabia and Kuwait) to explore the knowledge and practices of Middle Eastern population towards COVID-19. A previously developed questionnaire was used. Multiple linear regression analysis was used to identify predictors of COVID-19 knowledge.

Results: A total of 1,208 participants were involved in this study from the three countries (Jordan = 389, Saudi Arabia = 433, and Kuwait = 386). The majority of participants ($n = 810$, 67.2%) were females and aged 30 to 49 years ($n = 501$, 41.5%). Participants had moderate overall COVID-19 knowledge with a mean score of 7.93 (± 1.72) out of 12, 66.1%. Participants had better knowledge about disease prevention and control with 83.0%, whereas the lowest sub-scale scores were for questions about disease transmission routes (43.3%). High education level was an important predictor of greater COVID-19 knowledge scores ($p < 0.01$).

Conclusion: Middle Eastern participants are of a relatively low level of knowledge about COVID-19, particularly regarding its transmission routes. Policymakers are recommended to develop informative COVID-19 related campaigns targeted specifically towards university students, unemployed individuals and those with lower levels of education.

Keywords: COVID-19, Knowledge, Middle East, Practices

Introduction

Coronavirus disease 2019 (abbreviated "COVID- 19") is an infectious disease with unknown aetiology characterised with acute pneumonia that has been recognized in Wuhan, China in December 2019. Predominantly, it is characterised by fever, fatigue, and dry cough. Approximately, 20.0% of COVID-19 patients developed to the severe stage, which is characterised by acute respiratory distress syndrome, bleeding, and coagulation dysfunction (1). In the Middle East region, this virus has appeared in some countries before others. For example, it has been firstly identified in Iran then spread in Kuwait, Saudi Arabia, and Jordan. The spread of the virus in Kuwait earlier than others could be attributed to the fact that there was a national holiday in Kuwait in the period between the 23rd to the 29th of February, where most people used to spend it abroad. As people returned from vacations, confirmed cases with COVID-19 started to raise. In March 12, 2020, the World Health Organization (WHO) declared that the COVID-19 outbreak is a pandemic (2). The pandemic lingers to take a hefty toll on healthcare professionals, families, communities and the whole world. In response to that, Jordan, Saudi Arabia, and neighbouring Kuwait took drastic measures early on in a bid to contain the COVID-19 pandemic, which includes halting air travels, imposing curfews, and quarantining and testing thousands of individuals (3, 4).

Once a new pandemic starts, the focus of research and action within the medical and public health communities is chiefly and rightly directed towards the identification of the cause, clinical presentation, diagnosis as well as treatment (5). Few studies will address the epidemiology of the disease, the effectiveness of preventive measures, and the population psycho-behavioural directions. Nevertheless, addressing public health preventive measures deserve equal attention. Although there are several ongoing clinical trials assessing potential vaccines and treatments for COVID-19, currently there is no specific treatment that can combat the virus within medical practice. Therefore, public health measures are of crucial value. Such measures mandate the public to be aware of transmission means and have safe preventive practices (6). In this regard, people had concerns about the safety measures to be taken in order to protect themselves and their families from being infected. Generally, the spread of any infectious disease is associated with a high level of fear among the population (7). A particular concern in this regard is the spread of misinformation about COVID-19 on social media sites (8). Universal data collection and analysis of pandemic control hardly contains information about the knowledge and practices of the population regarding the disease and their significance (9, 10). To guarantee the best control over the transmission of the disease, community's adherence to important control measures are vital, which is affected to large extent by their knowledge and practices towards COVID-19 (9, 10).

Public practices that are built on knowledge ought to be evaluated during pandemics as it will enable policymakers to unravel generic issues from culture specific concerns and then communicate the best practices that appear to have an impact in successfully controlling the outbreak across different communities (11, 12). Thus there is an urgent need to understand what people knows about COVID-19, and which misperceptions they hold about this condition, in order to help healthcare authorities and the media to design effective information campaigns, to know which group of people should be targeted, and to help controlling the spread of the virus among population. Therefore, this study aims to assess the knowledge and practices of Middle Eastern population towards COVID-19 during its rapid rise period.

Methods

Study design and study population

A cross-sectional study by means of online survey was conducted between 19th of March and 06th of April 2020 in three Arab countries (Jordan, Saudi Arabia and Kuwait) to explore the knowledge and practices of Middle Eastern population towards COVID-19.

Sampling strategy

A convenience sample of eligible participants was invited to participate in the study from the three countries through social media (Facebook and WhatsApp). All participants voluntarily participated in the study and were thus considered exempt from written informed consent. Study aim and objectives were clearly explained at the beginning of the survey. The inclusion criterion was participants aged 18 years who was living either in Jordan, Saudi Arabia or Kuwait. Participants were excluded if they were: a) below 18 years of age; or b) unable to understand Arabic language.

Questionnaire tool

A previously developed questionnaire by Zhong et al. was adapted and used in this study (1). The original questionnaire was developed based on the National Health Commission of the People's republic of China's guidelines for clinical and community management of COVID-19 (13, 14). The original questionnaire had 12-questions (true/false questions): four regarding clinical presentations (K1 - K4), three regarding transmission routes (K5 - K7), and five regarding prevention and control (K8 - K12) of COVID-19. These questions were answered on a true/false basis with an additional "I don't know" option. A correct answer was given a score of one point, and any false or unknown answer was given a score of zero point. The total knowledge score could range from 0 to 12, with a higher score indicating a better knowledge about COVID-19. Cronbach's alpha coefficient of the knowledge questionnaire was 0.7 in our sample, showing acceptable internal consistency. Respondents' practices were assessed using two behaviour questions, which asked the participants about whether they have gone to any crowded place, and wearing a mask when going out in recent

days. In addition, the following information was collected about participants' demographics: age, gender, marital status, education level, income, and employment status.

Sample size

Using a confidence interval of 95%, a standard deviation of 0.5, a margin of error of 5%, the required sample size was 385 participants from each study population.

Ethical approval

This study was approved by the Research Ethics Committee at Faculty of Pharmacy in Isra University, Amman, Jordan. As participation in the study was voluntary, the Research Ethics Committee approved consent waiver.

Statistical analysis

Descriptive statistics were used to describe participants' demographic characteristics. Continuous data were reported as mean $\pm$ SD. Categorical data were reported as percentages (frequencies). Independent samples t-test/one-way analysis of variance (ANOVA) was used to compare the mean knowledge scores between different demographic groups. Participants' scores were interpreted as a continuous scale based on the scale midpoint, where scores above the midpoint identified stronger COVID-19 knowledge. Mean score was expressed in percentage out of 100% to facilitate the comparison between different sub-scales. Multivariable linear regression analysis was used to identify predictors of knowledge score. A two-sided $p < 0.05$ was considered as statistically significant. The statistical analyses were carried out using SPSS (version 25).

Results

Participants' characteristics

A total of 1,208 participants took part in this study (Jordan = 389, Saudi Arabia = 433, and Kuwait = 386). **Table 1** details the baseline characteristics of the participants in the three countries.

The majority of participants ($n = 810$, 67.2%) were females, aged 30 to 49 years ($n = 501$, 41.5%), married ($n = 685$, 56.8%), has bachelor degree ($n = 723$, 60.4%), employed ($n = 568$, 47.1%), and with an income of 2,113\$ and above ($n = 497$, 44.6%). Around 15.3% ($n = 183$) of the participants reported that they have gone to crowded places recently. Besides, around 50.1% ($n = 605$) of the participants reported that they wore mask when they leave their home.

Table 1: Participants characteristics from each country.

Demographics	Overall (n = 1,208)	Jordan (n = 389)	Saudi Arabia (n = 433)	Kuwait (n = 386)
Gender (n= 1,205) No. (%)				
Female	810 (67.2)	280 (72.0)	324 (75.0)	206 (53.6)
Age (n= 1,206) No. (%)				
18 – 29 years	424 (35.2)	237 (61.1)	131 (30.3)	56 (14.5)
30 – 49 years	501 (41.5)	112 (28.9)	189 (43.6)	200 (51.9)
50 years and above	281 (23.3)	39 (10.1)	113 (26.1)	129 (33.5)
Marital status (n= 1,207) No. (%)				
Single	429 (35.5)	213 (54.8)	148 (34.2)	68 (17.7)
Married	685 (56.8)	161 (41.4)	241 (55.7)	283 (73.5)
Divorced	57 (4.7)	5 (1.3)	31 (7.2)	21 (5.5)
Widowed	36 (3.0)	10 (2.6)	13 (3.0)	13 (3.4)
Education level (n= 1,198) No. (%)				
Completed secondary grade or lower	274 (22.9)	48 (12.5)	105 (24.3)	121 (31.7)
Completed bachelor degree	723 (60.4)	283 (73.7)	244 (56.5)	196 (51.3)
Completed higher education	201 (16.7)	53 (13.8)	83 (19.2)	65 (17.0)
Employment status (n= 1,206) No. (%)				
Retired	158 (13.1)	13 (3.3)	63 (14.5)	82 (21.4)
Unemployed	278 (23.1)	113 (29.0)	116 (26.8)	49 (12.8)
Employed	568 (47.1)	147 (37.8)	185 (42.7)	236 (61.5)
University students	202 (16.7)	116 (29.8)	69 (15.9)	17 (4.4)
Income (n= 1,115) No. (%)				
705 \$ or lower	368 (33.0)	200 (58.3)	130 (32.5)	38 (10.2)
705 \$ – 1,408 \$	175 (15.7)	96 (28.0)	62 (15.5)	17 (4.6)
1,408 \$ – 2,113 \$	75 (6.7)	15 (4.4)	26 (6.5)	34 (9.1)
2,113\$ and above	497 (44.6)	32 (9.3)	182 (45.5)	283 (76.1)
In recent days, have you gone to any crowded place? (n= 1,194) No. (%)				
Yes	183 (15.3)	85 (21.9)	38 (8.9)	60 (16.0)
In recent days, have you worn a mask when leaving home? (n= 1,195) No. (%)				
Yes	605 (50.1)	204 (52.6)	191 (44.3)	210 (55.9)

Table 2 below shows the mean scores (and score out of 100%) for COVID-19 knowledge questionnaire per subscale. The overall COVID-19 knowledge score was 66.1%. Participants had better knowledge about disease prevention and control with 83.0%, whereas the lowest sub-scale scores were for questions about disease transmission routes (43.3%).

Table 2: Participants mean scores for COVID-19 knowledge per subscale.

Questions category	Number of items	Range	Mean (± SD)	Participants score out of 100%
Clinical presentations	4	0 – 4	3.17 (0.98)	79.2
Transmission routes	3	0 – 3	1.30 (0.64)	43.3
Prevention and control	5	0 – 5	4.15 (1.04)	83.0
Total Knowledge scale	12	0 – 12	7.93 (1.72)	66.1

Table 3 below details the correct answer rates of the 12 questions on the COVID-19 knowledge questionnaire.

Participants had the highest rates of correct answers for questions related to the necessity of isolation and some procedures related to prevention and control of the infection (K10 – K12). On the other hand, the lowest rates of correct answers were for questions related to susceptibility of children and young adults to COVID-19, transferability of the infection from asymptomatic patients, and eating habits related to COVID-19 transmission (K5, K6, and K9).

Table 3: The correct answer rates of the COVID-19 knowledge questionnaire.

Questions	%
K11. Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.	98.4
K10. To prevent the infection by COVID-19, individuals should avoid going to crowded places such as train stations and avoid taking public transportations.	97.9
K12. People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days.	95.1
K7. The COVID-19 virus spreads via respiratory droplets of infected individuals.	92.1
K1. The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia.	91.5
K3. There currently is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection.	89.3
K4. Not all persons with COVID-2019 will develop to severe cases. Only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases.	69.5
K2. Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus.	68.7
K8. Ordinary participants can wear general medical masks to prevent the infection by the COVID-19 virus.	57.0
K5. Eating or contacting wild animals would result in the infection by the COVID-19 virus.	30.3
K6. Persons with COVID-2019 cannot infect the virus to others when a fever is not present.	9.2
K9. It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus.	4.1

Participants' demographics and COVID-19 knowledge

Table 4 below presents participants' demographics data and their COVID-19 knowledge scores.

Participants' knowledge scores significantly differed by country, age, marital status, education level, and whether they wear mask upon leaving home or not ($p < 0.05$).

Table 4: COVID-19 knowledge score by participants characteristics (n = 1,208).

COVID-19 knowledge score			
Variable	Mean	SD	P-value
Country			
Jordan	8.44	1.46	0.000***
Saudi Arabia	7.79	1.57	
Kuwait	7.59	1.99	
Gender			
Males	7.86	1.94	0.263
Females	7.97	1.61	
Age			
18 – 29 years	7.72	2.04	0.006**
30 – 49 years	8.01	1.49	
50 years and above	8.11	1.55	
Marital status			
Single	7.75	2.07	0.002**
Married	8.07	1.46	
Divorced	7.47	1.72	
Widowed	8.19	1.56	
Education level			
Completed secondary grade or lower	7.72	2.01	0.015*
Completed bachelor degree	7.94	1.70	
Completed higher education	8.18	1.31	
Employment status			
Retired	7.82	2.02	0.092
Unemployed	7.97	1.78	
Employed	8.04	1.51	
University students	7.70	1.91	
Income			
705 \$ or lower	8.01	1.70	0.094
705 \$ – 1,408 \$	8.24	1.69	
1,408 \$ – 2,113 \$	7.81	1.65	
2,113\$ and above	7.92	1.38	
In recent days, have you gone to any crowded place?			
Yes	8.11	1.89	0.325
No	7.99	1.49	
In recent days, have you worn a mask when leaving home?			
Yes	8.16	1.51	0.001**
No	7.86	1.59	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Multiple linear regression analysis showed that individuals who had a bachelor degree or higher education level had a greater knowledge scores ($p < 0.01$). On the other hand, divorced individuals, university students, individuals with an income 1,408 \$ and above had a lower knowledge score ($p < 0.05$) Table 5.

Table 1: Multiple regression analysis predicting participants' COVID-19 knowledge.

Variable	Model 1 ^a		
	B	SE	ß
Demographic data			
Age			
30 – 49 years	0.162	0.154	0.051
50 years and above	0.343	0.197	0.093
Gender			
Females	0.047	0.102	0.014
Marital status			
Married	0.059	0.138	0.019
Divorced	-0.644	0.246	-0.089**
Widowed	0.050	0.324	0.005
Educational level			
Completed bachelor degree	0.329	0.123	0.103**
Completed higher education	0.519	0.159	0.127**
Employment status			
Unemployed	-0.263	0.207	-0.067
Employed	-0.138	0.180	-0.044
University students	-0.582	0.241	-0.137*
Income			
705 \$ – 1,408 \$	-0.014	0.152	-0.003
1,408 \$ – 2,113 \$	-0.456	0.213	-0.073*
2,113\$ and above	-0.547	0.152	-0.174***
Constant			7.967
Adjusted R ²			0.029
P-value			P<0.001

*p < 0.05, **p < 0.01, ***p < 0.001

a: includes age, gender, marital status, educational level, employment status, and income level

B: the average change in the dependent variable associated with a 1 unit change in the independent variable, statistically controlling for the other independent variables; SE: it is the standard deviation of its sampling distribution or an estimate of that standard deviation; ß: a statistical measure that compares the strength of the effect of each individual independent variable to the dependent variable

Discussion

To the best of our knowledge, this is the first study that assesses the knowledge and practices towards COVID-19 among the Arabic speaking Middle Eastern countries. The results revealed that participants are still embracing misconceptions about COVID-19, resulting in an insufficient practice of protective measures against COVID-19 infection. However, some of those individuals who did not adhere to protective measures could be the one who were in duties that necessitate being in a crowded places such as port employees and working in the healthcare sector. The findings of this study

revealed that the overall knowledge score among the three countries was around 66.1% (score 7.93 out of 12) with the highest was among Jordanians with a mean score of (8.44 (± 1.46); 70.3%) indicate an average level of knowledge about the pandemic. Among the three countries, the participants achieved the lowest knowledge score in the "transmission routes" sub-scale with a score of 43.3%. Whereas the highest knowledge score was recorded on the "preventive and control measures" sub-scale with a score of 83.0%. Overall, the total knowledge score (66.1%) was moderate, which was unexpected as this epidemiological survey was conducted during the advanced stage of the pandemic.

Although the low percentage 15.3% (183/1,194) with regard to the reported practices of attending crowded places were encouraging, only 50.1% (605/1,195) of participants declared that they wore masks when leaving home. The World Health Organization (WHO) during Feb 2020 indicated that there is a priority for research to focus on actions that can save lives now which included "*Optimise use of protective equipment and other infection prevention and control measures in health care and community settings – It is critical to protect health care workers and the community from the transmission and create a safe working environment*" (10). The needs to avoid the crowd and wear masks upon leaving the house are key practices and top priority of the WHO. A similar study conducted by Zhong et.al. (2020) in China (1), showed that knowledge score was 90.0% and citizens were compliant with protective measures, where 96.4% avoided crowded places and 98.0% wore masks upon departing their homes during COVID-19 outbreak (1). These results undoubtedly revealed that there were significant gaps in the public knowledge about COVID-19 within the Arabic speaking Middle Eastern countries and hence suggest the need for improving individuals' COVID-19 knowledge via health education, which may cause improvements in their practices towards COVID-19 (1).

Although the situation of the pandemic is severe and the news reports on this public health emergency through various channels of information and via hotlines of the Ministries of Health, a lot of people learn about this infectious disease from invalid social media resources such as WhatsApp, Instagram, Twitter, etc. This has also been mentioned by Gelsetzer (2020) (15), where it has been noticed that a substantial proportion of people in the United States (US) and the United Kingdom (UK) believe in the "myth busters" who continue to circulate inaccurate information about COVID-19. Such information included that rinsing nose with saline, using a hand dryer, taking antibiotics, and gargling mouthwash could be effective preventive measures against COVID-19, and that receiving a letter or package from China may pose a risk of Covid-19 infection. Other unreliable beliefs of the general public in both the US and the UK about COVID-19 were that it is a fatal disease and that children are at high risk of death from it. Another disbelief was that medical masks are highly effective in protecting from catching a COVID-19 infection (15). However, people in the Middle East region have reported some similar beliefs and other different. For example, in the current study, most participant

(66.9%) reported that it is unnecessary for children and younger adults to take preventive measures against COVID-19. Thus, in contrast to people in the US and UK, people in the Middle East believe that children and younger adults are at lower risk of COVID-19 infection. On the other hand, most people (57.0%) in the Middle East shared similar beliefs regarding wearing medical masks to prevent them from COVID-19 infection. Regarding the fatality feature of COVID-19, Middle East participants reported conflicting beliefs to people in the US and UK, as the majority (89.0%) believe that although there is no effective treatment, supportive measurements and symptoms alleviation can cure the infection.

Unfortunately, the present study showed that 15.3% of participants still go to crowded places and around 50.0% do not wear masks when leaving homes recently. However, not wearing a mask when leaving home could be related to that most of the participants (84.7%) were very cautious and avoided crowded places. This strict preventive practice from the participants could be primarily attributed to the very strict prevention and control measures implemented by local governments such as traffic limits all throughout the countries and the shutdown of shopping malls and work in all sectors except the health sector. Second, this could be due to the population fear of the virus and its high infectivity. In China, although a study by Zhong et al. (2020) was conducted during the very early stage of the pandemic, people achieved a correct rate of 90.0% on COVID-19 knowledge questionnaire (1). In addition, the population's adherence to the preventive and control measures was higher than in the Middle East, where almost all people stayed home during the virus outbreak period, and wear masks when leaving homes. This could be attributed to the more serious situation of the COVID-19 pandemic in China, where higher rates of death were recorded, resulting in higher beliefs and adherence to preventive measures.

Further analysis of the findings was directed towards determining demographic factors associated with knowledge gaps among participants. Such findings will be valuable for public-health policymakers and healthcare professionals to recognize target populations for health education activities on the COVID-19 outbreak. This is critical as the countries involved in the study are still at the beginning of the outbreak and governments took extreme measures to contain the pandemic. But such measures, which include imposing a curfew, are virtually useless unless were accompanied by responsible individuals' preventative practices (3). In this study as well as in previous studies in China, US, and UK, an association has been noticed between particular demographic characteristics and knowledge, beliefs, and practices towards COVID-19 (1, 15). For example, in China, an association between non-adherence to preventive and control measures and male gender, occupation of "students", marital status of "others", residing in other parts of China, and poor COVID-19 knowledge has been reported (1). Those findings were supported by previous studies regarding age and gender patterns of risk-taking behaviours (16, 17). In the US and UK, Geldsetzer (2020) has

reported lower fatality rates due to COVID-19 infection among individuals of East-Asian ethnicity and children (15). In the current study, there was a significant difference between knowledge scores in the three countries included in the analyses, and the highest knowledge score among the participants has been found in Jordan. Both males and females showed similar levels of knowledge about COVID-19.

Higher COVID-19 knowledge scores were found to be significantly associated with age and educational attainment, which is in line with the study conducted in China during the COVID-19 pandemic (1). Older individuals above the age of 29 years showed a significant increase in knowledge scores than younger ones. Similarly, an appreciable increase in knowledge score with the increase in education level was noted. This could suggest that the contents and forms of health-related information about the pandemic could not be understandable and acceptable to young adults and the less educated individuals (12). Our findings are consistent with several previously published studies that related age and the level of education with knowledge and awareness about outbreaks (18, 19). Furthermore, several studies reported that the lack of knowledge contributed to the emergence and spread of the outbreak. Therefore, providing targeted health education programs to raise awareness is vital. Such programs need to be tailored to young individuals and particularly those with lower education levels (19-21).

Furthermore, a significant negative effect on the knowledge score was the employment status, specifically among students ($p < 0.05$). The results are aligned to the finding that lack of knowledge is related to young people (18 – 29 years). Such findings are alarming, as the lack of knowledge about COVID-19 is correlated with a higher prevalence rate of the infection (1, 22). Therefore, there is a need for improving students' knowledge about COVID-19 by means of health education, which may also result in improvements in their practices towards COVID-19. Such results could support the decision made by many countries including Jordan, Kuwait, and Saudi Arabia in taking a political commitment to temporally close all educational institutions to contain the spread of the COVID-19 pandemic. Globally, the action involved 188 countries, affecting around 1.5 billion learners. The mode of teaching moved into emergency remote learning (22, 23). Yet, although the closure of schools and educational facilities is a good mean to prevent young adults from mixing with others, it will not prevent exposure even with curfew laws. Young adults will always go out and get exposed to the risk of getting infected as the level of knowledge is low. A recent study on COVID-19 concluded that educational institutions closures alone would preclude only 2–4% of deaths, which is a lot less than other social distancing interventions. The integration of additional social distancing strategies along with educational institutions closures needs to be considered (24). Furthermore, the results of our study pertinent to knowledge scores stratification according to demographics are in line with studies on COVID-19 in China and severe acute respiratory syndrome (SARS) outbreaks among

others (1, 25). These findings also proposed that health education strategies would be more effective if it was designed to targets certain demographic groups, such as university students.

Good knowledge is vital to enable individuals to have better practices in pandemics and outbreaks. A study on SARS demonstrated that a higher knowledge score was found to be connected with improved adherence to precautionary practices (11, 26). Of interest, an income of $\geq 1,409$ \$ ($p < 0.05$) had a significant negative association with the knowledge score in our cohort, showing that high income does not improve knowledge and practices. However, this is contrary to a previous study on the influenza pandemic, where there was no association between knowledge and income (26). A possible reason for such result is that the higher income of individuals is accompanied with low education level. The current study showed that knowledge scores significantly differed across marital status categories ($P < 0.002$), divorced participants had a significant negative association with COVID-19 knowledge score ($p < 0.01$). Our findings were in line with the results obtained from the study on COVID-19 in China, which revealed a statistically significant difference in knowledge score according to marital status, however, they found that the category denotes as others (included divorced and widowed, separated, remarried) showing the highest score in knowledge (11.0 out of 12.0) (91.7%), $P < 0.001$ (1). This difference could be justified by two elements. Firstly, different countries might have different cultural dimension and hence results could not be compared. Secondly, the group used in the Chinese study included all divorced, separated, widowed and remarried individuals and hence we could not build a good correlation (1).

Overall, knowledge scores within our cohort were significantly associated with a higher likelihood of dangerous practices towards COVID-19 pandemic. Such findings indicate the presence of knowledge gap and the need to improve individuals' COVID-19 knowledge via extensive health education strategies. Such strategies are to be tailored and targeted towards specific demographic groups particularly, university students, individuals with low education, higher income and divorced.

Strengths and limitations

To the best of our knowledge this is the first study in the Arabic Speaking Middle Eastern countries that investigated the public knowledge and practices during COVID-19 pandemic. A strength of the study is that a large sample of participants were recruited during this critical period - the actual COVID-19 outbreak - and hence replies reflect the actual status. The participants were from three countries namely, Jordan, Saudi Arabia and Kuwait, which increases the generalisability of these findings. Additionally, the use of previously used assessment tool that allowed comparison with other population was another strength of the study. However, there are some limitations. The study design itself, a cross-sectional survey design, limited our ability to identify causality between study variables. There are limited studies that assessed knowledge and practices of individuals during COVID-19 pandemic worldwide and in the Middle East specifically, which limited our ability to compare our

findings with Arabic-speaking countries of a similar socioeconomic level and culture. In this study we employed a quantitative methodology with pre-set responses, which might not have allowed participants' views to provide varied but useful qualitative information. In addition, we used an online survey for data collection and therefore, some vulnerable populations within the three countries under the COVID-19 pandemic could not be reached and we may have missed some of the targeted population. However, we tackled this by distributing the survey among three different countries and widely used the social media. Finally, we were not able to estimate the response rate for our questionnaire study.

Conclusion

Findings of this study suggest that Middle Eastern participants are of a relatively low level of knowledge about COVID-19, particularly regarding its transmission routes. The majority of the population showed appropriate practice by avoiding crowded places and staying home during the rapid rise period of the COVID-19 outbreak. However, not wearing a mask when leaving home was predominant. As good COVID-19 knowledge is associated with optimistic attitudes and appropriate practices towards COVID-19, policymakers are in a position to develop targeted information campaigns provided to targeted population specifically university students, unemployed individuals and those with lower levels of education. This information could be conveyed to people by clinicians to their patients, and news coverage supplied by the media and social media platforms.

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RESEARCH ARTICLE

Knowledge, attitude, and practice regarding COVID-19 outbreak in Bangladesh: An online-based cross-sectional study

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Abstract

In Bangladesh, an array of measures have been adopted to control the rapid spread of the COVID-19 epidemic. Such general population control measures could significantly influence perception, knowledge, attitudes, and practices (KAP) towards COVID-19. Here, we assessed KAP towards COVID-19 immediately after the lock-down measures were implemented and during the rapid rise period of the outbreak. Online-based cross-sectional study conducted from March 29 to April 19, 2020, involving Bangladeshi residents aged 12–64 years, recruited via social media. After consenting, participants completed an online survey assessing socio-demographic variables, perception, and KAP towards COVID-19. Of the 2017 survey participants, 59.8% were male, the majority were students (71.2%), aged 21–30 years (57.9%), having a bachelor's degree (61.0%), having family income >30,000 BDT (50.0%), and living in urban areas (69.8). The survey revealed that 48.3% of participants had more accurate knowledge, 62.3% had more positive attitudes, and 55.1% had more frequent practices regarding COVID-19 prevention. Majority (96.7%) of the participants agreed 'COVID-19 is a dangerous disease', almost all (98.7%) participants wore a face mask in crowded places, 98.8% agreed to report a suspected case to health authorities, and 93.8% implemented washing hands with soap and water. In multiple logistic regression analyses, COVID-19 more accurate knowledge was associated with age and residence. Sociodemographic factors such as being older, higher education, employment, monthly family income >30,000 BDT, and having more frequent prevention practices were the more positive attitude factors. More frequent prevention practice factors were associated with female sex, older age, higher education, family income > 30,000 BDT, urban area residence, and having more positive attitudes. To improve KAP of general populations is crucial during the rapid rise period of a pandemic outbreak such as COVID-19. Therefore, development of effective health education programs that incorporate considerations of KAP-modifying factors is needed.

files. Anonymized complete dataset uploaded as well.

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Introduction

Coronavirus disease 2019 (COVID-19) is a global public health threat and has evolved to become a pandemic crisis around the world, which is caused by the severe acute respiratory syndrome, coronavirus 2 (SARS-CoV-2) [1]. In response to this serious situation, COVID-19 was declared as a public health emergency of international concern by the World Health Organization (WHO) on January 30 and called for collaborative efforts of all countries to prevent the rapid spread of COVID-19 [2]. In Bangladesh, the first confirmed case was reported on 8 March 2020 [3]. Infection rates apparently remained low until the end of March, but a steep rise in cases began in April 2020 with case doubling times of 2 days [4]. As of 01 June 2020, according to the Institute of Epidemiology, Disease Control and Research (IEDCR), in Bangladesh 49,534 confirmed cases were reported, including 10,597 (21.4%) who recovered, and 672 (1.36%) related deaths [3]. The highest attack rate (AR) was observed in Dhaka city (874.9/1,000,000), followed by (2,040/1,000,000), followed by Narayanganj district (616.2/1,000,000), Munshiganj (432.4/1,000,000), Gazipur (168.7/1,000,000), Gopalganj (145.7/1,000,000) [3].

COVID-19 prompted implementation of public health protocols to control the spread of the virus, many of them involving social distancing, hand washing, and lockdown procedures, but has also resulted in creating public anguish and massive fear [5], particularly among the unaffected population [6]. Bangladesh has not previously experienced epidemics such as SARS or MERS, and it is clear that the public healthcare systems are not readily prepared for COVID-19. The magnitude and rapid proliferation of COVID-19 through slightly symptomatic or asymptomatic infected people in Bangladesh stresses the need to identify the behavioral responses of the population, such as to better address behavioral determinants of pandemic control [2]. Official measures such as school closures, shutdown of offices for an initial 30-day duration, restrictions on leaving home after 6.00 pm, and legal actions on individuals leaving their dwellings after 7.00 pm, along with gathering restrictions in mosques and people gatherings have rapidly been imposed in many regions of the country [8, 9]. However, for such measures to be effective, public adherence is essential, which is affected by their knowledge, attitudes, and practices (KAP) towards COVID-19 [10, 11]. There are a limited number of studies on knowledge and attitudes during epidemics that have been conducted in Bangladesh. However, the lessons learned from the studies conducted in other countries in an epidemic situation such as the SARS outbreak in 2003 suggest that knowledge and attitudes towards infectious diseases are associated with serious panic and other emotional reactions among the population, which can further complicate attempts to prevent the spread of the disease [12, 13]. Suggestions from a Latin America-based study during the outbreaks of chikungunya, Zika, and dengue reported low levels of participation and commitment to the imposed control measures in populations [14].

KAP is an important cognitive key in public health regarding health prevention and promotion. It involves a range of beliefs about the causes of the disease and exacerbating factors, identification of symptoms, and available methods of treatments and consequences [15]. Beliefs about COVID-19 come from different sources, such as stereotypes concerning similar viral diseases, governmental information, social media and internet, previous personal experiences, and medical sources. The accuracy of these beliefs may determine different behaviors about prevention and could vary in the population. In many cases, the absence of knowledge, or if most of the medical-related beliefs are actually misconstrued or false, these may carry a potential risk [16]. In Hubei, China, one of the first studies analyzing attitudes and knowledge about COVID-19 concluded that attitudes towards government measures to contain the epidemic were highly associated with the level of knowledge about COVID-19 [17]. The authors reported that higher levels of information and education were associated with more positive

attitudes towards COVID-19 preventive practices [5, 12]. Perception of risk is also a key factor in commitment to prevention during outbreaks of global epidemics [5, 18–21].

Considering the lack of studies related to coronavirus epidemics and how to facilitate outbreak management of COVID-19 in Bangladesh, there is an urgent need to understand the public's KAP of COVID-19. Here, we aimed to investigate KAP towards COVID-19 during the rapid rise period and immediately after the implementation of lockdown measures in Bangladesh.

Methods

Participation and procedure

A cross-sectional and anonymous online population-based survey was conducted among individuals aged 12–64 years. The survey was conducted from March 29 to April 20, 2020, immediately after the implementation of lockdown measures by the government of Bangladesh. A semi-structured questionnaire was designed for the Google survey tool (Google Forms), and the generated link was shared to public on social media (i.e., Facebook, WhatsApp). The link was also shared personally to the contact list of investigators and research assistants. The investigators' decision to collect the data using online approaches was predicated on maintaining social distance during the strict lockdown in Bangladesh. Initially, 2,068 potential respondents provided written informed consent online. Of these, 2,017 respondents completed the entire survey, generating a response rate of 97.5%. The inclusion criteria to participate in the study were being a Bangladeshi resident, having internet access, and voluntary participation.

Measures

A semi-structured and self-reported questionnaire containing informed consent, questions regarding socio-demographics, knowledge, attitude, and practice.

Socio-demographic measures. Socio-demographic information was collected, including gender, age, education, occupation, marital status, nature of the family (nuclear/joint, with the joint being an extended family, often of multiple generations), number of family members, monthly family income, and location of permanent residence. Monthly family income was categorized into three classes: <20,000 Bangladeshi Taka (BDT), 20,000–30,000 BDT, and >30,000 BDT [22].

Knowledge, attitude, and practice. To assess the level of knowledge, attitude, and practice of the respondents, a total of 19 questions (including 6 for knowledge, 6 for attitude, and 7 for practice) were included. The survey questions were adapted and modified from previously published literature regarding viral epidemics related to MERS-CoV disease [23, 24], infection prevention and control measures for COVID-19 by World Health Organization [25], and guidelines suggested by the country's Institute of Epidemiology, Disease Control and Research (IEDCR) [26].

After completion of the initial draft of the survey questionnaire, it was validated and adopted as follows: firstly, the questionnaire was sent to four academic experts knowledgeable in the area. After coordination and consensus of all experts' opinions, the final questionnaire was drafted, and underwent pilot testing in 30 individuals to confirm the reliability of the questionnaire. The data from the pilot study were loaded into SPSS version 25, and subjected to reliability coefficient analysis. Regarding the pilot data, the Cronbach's alpha coefficient of the knowledge, attitude, and practice were 0.60, 0.43, and 0.74, respectively, and overall Cronbach's alpha of KAP questions was 0.73, which indicates acceptable internal consistency [27]. For field data, the Cronbach's alpha coefficient of the knowledge, attitude, and practice were 0.60, 0.20, and 0.63, respectively, and overall Cronbach's alpha of KAP questions was 0.60.

The knowledge section consisted of 6 items and each question had a possible response of "Yes", "No" and "Don't know" (e.g., *Is COVID-19 a dangerous disease?*). The correct answer (Yes) was coded as 1, while the wrong answer (No/ Don't know) was coded as 0. The total score ranged from 0–6, with an overall greater score indicates more accurate knowledge. A cut off level of ≥ 4 was set for more accurate knowledge.

The attitude section consisted of 6 items, and the response of each item was indicated on a 3-point Likert scale as follows 0 ("Disagree"), 1 ("Undecided"), and 2 ("Agree") (e.g., *It is crucial to report a suspected case to health authorities.*). The total score was calculated by summing the raw scores of the six questions ranging from 0 to 12, with an overall greater score indicating more positive attitudes towards COVID-19. A cut off level of ≥ 11 was set for more positive attitudes towards the prevention of COVID-19.

The practice section included 7 items practice measures responding to the COVID-19, and each item was responded as "Yes", "No", and "Sometimes" (e.g., *Do you use tissues or handkerchiefs during coughing/sneezing?*). Practice items' total score ranges from 0–7, with an overall greater score indicates more frequent practices towards the COVID-19. A cut off level of ≥ 6 was set for more frequent practices.

Statistical analysis

The data analysis was performed using Microsoft Excel 2019 and SPSS version 25.0 (Chicago, IL, USA). Microsoft Excel was used for editing, sorting, and coding. The excel file was then imported into SPSS software. Descriptive statistics (frequencies, percentages, means, standard deviations) and first-order analyses (i.e., chi-square tests) were performed. Binary logistic regression was performed with a 95% confidence interval to determine significant associations between categorical dependent and independent variables.

Ethical considerations

The study was conducted in accordance with the Institutional Research Ethics and the declaration of Helsinki. Formal ethical approval was granted by the Ethical Review Committee, Uttara Adhunik Medical College, Uttara, Dhaka-1260, Bangladesh (Ref: UAMC/ERC/04/2020). The consent form documented the aims, nature, and procedure of the study. Anonymity and confidentiality were strictly maintained.

Results

A total of 2,017 respondents were included in the final analysis, of which 59.8% male with an average age of 24.4 ± 5.4 years (SD) ranging from 12 to 64 years. Almost all respondents were not married (80.8%). The majority were students (71.2%), had a bachelor's level of education (61.0%), came from urban areas (69.8%), lived in nuclear families (77.9%) and their monthly family income was $> 30,000$ BDT (50.0%) (Table 1).

Perception towards the COVID-19 about mode of transmission, incubation period, symptoms, risk factors, treatments, prevention, initiatives, and challenges

In the perception component, Table 2 depicts our findings. For the mode of transmission, more than half of the respondents reported close contact with an infected person (93.7%), direct transmission during coughing (66.4%), touching contaminated surfaces (61.3%), along with others as just as contact with infected animals (30.8%), through eating infected animal products (e.g., meat, milk) (21.4%), and only 0.5% had no idea about the mode of transmission

Table 1. Demographic characteristics of participants (N = 2,017).

Variables	n	(%)
Gender		
Male	1206	(59.8)
Female	811	(40.2)
Age		
12–20	671	(33.3)
21–30	1168	(57.9)
>30	178	(8.8)
Education		
Secondary (6–10)	20	(1.0)
Intermediate (11–12)	226	(11.2)
Bachelor	1230	(61.0)
Higher education (above bachelor)	541	(26.8)
Marital status		
Unmarried	1630	(80.8)
Married	379	(18.8)
Divorced	8	(0.4)
Occupation		
Student	1437	(71.2)
Housewife	64	(3.2)
Govt. employee	122	(6.0)
Non-govt. employee	315	(15.6)
Businessman	52	(2.6)
Unemployment	27	(1.3)
Family type		
Nuclear	1572	(77.9)
Join	445	(22.1)
No of family member		
<5	1449	(71.8)
≥5	568	(28.2)
Monthly family income		
<20,000 BDT	512	(25.4)
20,000–30,000 BDT	497	(24.6)
>30,000 BDT	1008	(50.0)
Residence		
Rural area	610	(30.2)
Urban area	1407	(69.8)

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of COVID-19. Most of the respondents (91.3%) reported the correct incubation period (2–14 days), and only 2.4% had no knowledge. Most of the respondents (99.4%) reported fever, dry cough, and difficulty breathing as the common symptoms of the COVID-19. On the other hand, half of the respondents (51.2%) reported sore throat, nasal stuffiness, along with headache (0.1%), diarrhea (0.7%), and no idea (0.4%).

The respondents identified risk groups for developing COVID-19 as follows: older age persons (86.1%), individuals with cancer, diabetes, chronic respiratory diseases (74.6%), migrants from other parts of the world having COVID-19 (44.8%), children (25.3%), pregnant women (21.2%), and no idea (0.8%). The majority (80.7%) reported supportive treatments, but a vaccine was rarely mentioned (1.0%), and 18.3% had no idea about the treatment options of COVID-19.

Table 2. Perception towards COVID-19 about the mode of transmission, incubation period, symptoms, risk factors, treatments, prevention initiatives, and challenges.

Variables	Total	Male	Female
	N = 2017		
	n (%)	n (%)	n (%)
How is COVID-19 spread?			
Direct transmission during coughing	1339 (66.4)	816 (60.9)	523 (39.1)
Touching contaminated surfaces	1236 (61.3)	773 (62.5)	463 (37.5)
Contact with infected animals	622 (30.8)	396 (63.7)	226 (36.3)
Through eating infected animal products (e.g., meat, milk)	431 (21.4)	276 (64.0)	155 (36.0)
Close contact with an infected person	1889 (93.7)	1129 (59.8)	760 (40.2)
Don't know	11 (0.5)	7 (63.6)	4 (36.4)
Symptoms appear after which of the following?			
2–5 days	126 (6.2)	82 (65.1)	44 (34.9)
2–14 days	1842 (91.3)	1092 (59.3)	750 (40.7)
Don't know	49 (2.4)	32 (65.3)	17 (34.7)
What are the symptoms of COVID-19?			
Fever, dry cough, difficulty of breathing	2004 (99.4)	1199 (59.8)	805 (40.2)
Sore throat, blocked nose	1032 (51.2)	614 (59.5)	418 (40.5)
Headache	3 (0.1)	0 (0.0)	3 (100.0)
Diarrhea	14 (0.7)	10 (71.4)	4 (28.6)
Don't know	8 (0.4)	5 (62.5)	3 (37.5)
Who is most at risk for COVID-19 infection?			
Old aged persons	1737 (86.1)	1056 (60.8)	681 (39.2)
Pregnant women	427 (21.2)	249 (58.3)	178 (41.7)
Children	511 (25.3)	305 (59.7)	206 (40.3)
Individuals with cancer, diabetes, chronic respiratory diseases	1505 (74.6)	878 (58.3)	627 (41.7)
Migrants from other parts of the world having COVID-19	903 (44.8)	525 (58.1)	378 (41.9)
Don't know	17 (0.8)	15 (88.2)	2 (11.8)
Which of the following describes COVID-19 treatment?			
Supportive treatment	1627 (80.7)	967 (59.4)	660 (40.6)
Vaccine	20 (1.0)	11 (55.0)	9 (45.0)
Don't know	370 (18.3)	228 (61.6)	142 (38.4)
What to do to prevent coronavirus?			
Wash hands with water and soap	1885 (93.5)	1136 (60.3)	749 (39.7)
Avoid touching the eyes and nose with hands	1823 (90.4)	1102 (60.4)	721 (39.6)
Avoid contacts with infected people	1709 (84.7)	1035 (60.6)	674 (39.4)
Using masks	1759 (87.2)	1054 (59.9)	705 (40.1)
Maintaining social distance	1886 (93.5)	1140 (60.4)	746 (39.6)
Maintaining self-quarantine	1551 (76.9)	945 (60.9)	606 (39.1)
Taking all family members in home quarantine	1575 (78.1)	931 (59.1)	644 (40.9)
Strengthening to health care	1283 (63.6)	765 (59.6)	518 (40.4)
Creating a strong voluntary force to fight against COVID-19	539 (26.7)	346 (64.2)	193 (35.8)
Have you taken any initiative to protect your family members?			
Temporary closure of outside people coming inside the home	1769 (87.8)	1037 (58.6)	732 (41.4)
Arrange for handwashing with soap inside or outside the home	1723 (85.5)	1039 (60.3)	684 (39.7)
Wash hands with soap after touching pets	794 (39.4)	501 (63.1)	293 (36.9)
Have you faced any problems to create awareness in your family about COVID-19?			
Negligence about the severity of the disease	810 (40.3)	531 (65.6)	279 (34.4)

(Continued)

Table 2. (Continued)

Variables	Total	Male		Female	
	N = 2017				
	n (%)	n (%)		n (%)	
Reluctance to use masks	512 (25.5)	335 (65.4)		177 (34.6)	
Not being able to stop going out of the house	1147 (57.1)	695 (60.6)		452 (39.4)	
Don't face the problem	395 (19.7)	225 (57.0)		170 (43.0)	

* indicates multiple responses.

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The respondents recognized the following preventive measures for the COVID-19: washing hands with water and soap (93.5%), maintaining social distance (93.5%), avoid touching the eyes, nose with hands (90.4%), using a mask (87.2%), avoid contacts with infected people (84.7%), taking all family members into home quarantine (78.1%), maintaining self-quarantine (76.9%), strengthening to health care (63.6%), and creating a strong force to fight against COVID-19 (26.7%).

The respondents took the initiative to protect their family members: temporary and absolute restricted access to outside people coming inside the home (87.8%), arrange for hand-washing with soap inside or outside the home (85.5%), and wash hands with soap after touching pets (39.4%). The respondents also reported that they faced many problems to create awareness among their family members: not being able to stop from leaving the house (57.1%), negligence about the severity of the disease (40.3%), reluctance to use masks (25.5%), and only 19.7% had no problems.

Knowledge

For each question of knowledge, the distribution of responses from participants is presented in Table 3 with gender differences. There were no significant gender differences for each item of knowledge questions; 48.3% of respondents had more accurate knowledge, and 51.7% of respondents had comparatively inaccurate knowledge regarding COVID-19. The proportion of more accurate knowledge were significantly more likely to be among (i) younger (12–20 years) (49.3% vs. 38.8% in aged more than 30 years, $p = .029$), and (ii) be a respondent from a rural area (52.8% vs. 46.3% in those from an urban area, $p = .008$) (see Table 6).

The sociodemographic factors of more accurate knowledge were 12–29 years age group vs. >30 years (OR = 1.54; 95%CI = 1.10–2.16, $p = .012$), and rural vs. urban areas (OR = 1.295; 95%CI = 1.07–1.57, $p = .008$) (see Table 6).

Attitude

For each question focused on attitude, the distribution of responses from participants is presented in Table 4. The response rates of "Agree" were significantly higher in females (99.5% vs. 98.3% in males, $p = .043$) to the item of attitude section regarding "It is crucial to report a suspected case to health authorities". Furthermore, the response rates of "Agree" were significantly higher in females (99.6% vs. 98.1% in males, $p = .011$) to "It is important to use a face mask in a crowded place."

The findings indicated that 62.3% of respondents had more positive attitudes towards COVID-19. The proportion of more positive attitudes were significantly more likely to be (i) among older individuals (> 30 years) (72.5% vs. 55.1% in aged 12–20 years, $p < .001$), and (ii) those with higher education (74.1% vs. 52.2% in intermediate [class 11–12], $p < .001$), (iii) married (70.4% vs. 37.5% in divorced, $p = .001$), (iv) housewives (78.1% vs. 58.2% in student,

Table 3. Knowledge and gender difference of participants (N = 2017).

Variables	Total N = 2017		Male		Female		χ^2	df	p-value
	n	(%)	n	(%)	n	(%)			
Is COVID-19 a dangerous disease?									
Yes	1951	(96.7)	1160	(96.2)	791	(97.5)	2.988	2	0.224
No	40	(2.0)	27	(2.2)	13	(1.6)			
Don't know	26	(1.3)	19	(1.6)	7	(0.9)			
Does it affect only humans?									
Yes	1210	(60.0)	735	(60.9)	475	(58.6)	1.161	2	0.560
No	567	(28.1)	330	(27.4)	237	(29.2)			
Don't know	240	(11.9)	141	(11.7)	99	(12.2)			
Does it transmit from humans to animals?									
Yes	1013	(50.2)	612	(50.7)	401	(49.4)	4.690	2	0.096
No	578	(28.7)	358	(29.7)	220	(27.1)			
Don't know	426	(21.1)	236	(19.6)	190	(23.4)			
Does it transmit from animals to humans?									
Yes	1013	(50.2)	612	(50.7)	401	(49.4)	4.690	2	0.096
No	578	(28.7)	358	(29.7)	220	(27.1)			
Don't know	426	(21.1)	236	(19.6)	190	(23.4)			
Is it transmitted by animal products (e.g., milk, meat)?									
Yes	509	(25.2)	300	(24.9)	209	(25.8)	0.406	2	0.816
No	1017	(50.4)	615	(51.0)	402	(49.6)			
Don't know	491	(24.3)	291	(24.1)	200	(24.7)			
Is it transmitted in well-cooked products?									
Yes	53	(2.6)	35	(2.9)	18	(2.2)	3.859	2	0.145
No	1821	(90.3)	1076	(89.2)	745	(91.9)			
Don't know	143	(7.1)	95	(7.9)	48	(5.9)			

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$p < .001$), (v) come from joint family (66.7% vs. 61.1% in nuclear family, $p = .029$), (vi) have monthly family income $> 30,000$ BDT (65.2% vs. 57.8% in those less than 20,000 BDT, $p = .016$), and (vii) have more frequent safety-related preventive practices (66.1% vs. 57.7% in comparatively less frequent practices, $p < .001$) (see Table 6).

Finally, regarding variables related to more positive attitudes against COVID-19, we found being younger (aged 12–20 years) vs. older (> 30 years) significantly differed (OR = 0.47; 95% CI = 0.33–.67, $p < .001$). Additional factors of more positive attitudes against COVID-19 were having higher education (above bachelor), being unemployed, having joint families, having monthly family income more than 30,000 BDT, and having more frequent practices (Table 6).

Practice

For each question of practice, the distribution of responses from participants is presented in Table 5. The response rates of “Yes” were significantly higher in females (81.8% vs. 73.5% in males, $p < .001$) to the item of practice section regarding “Do you use tissues during coughing/sneezing?”, as well as “Do you wash hands frequently using water and soaps?” (95.6% vs. 92.5% in males, $p = .023$). Similarly, “Yes” response rates were significantly higher in females (96.2% vs. 87.1% in males, $p < .001$) to “Do you maintain social distance (or home quarantine)?”, to “Do you maintain a healthy lifestyle focusing on outbreak?” (88.3% vs. 81.4% in males, $p < .001$), and to “Do you obey all government rules related to the COVID-19?” (93.0% vs. 85.4% in males, $p < .001$).

Table 4. Attitude and gender difference of participants (N = 2017).

Variables	Total N = 2017		Male		Female		χ^2	df	p-value
	n	(%)	n	(%)	n	(%)			
It is crucial to report a suspected case to health authorities.									
Agree	1993	(98.8)	1186	(98.3)	807	(99.5)	6.292	2	0.043
Undecided	12	(0.6)	11	(0.9)	1	(0.1)			
Disagree	12	(0.6)	9	(0.7)	3	(0.4)			
It is important to use a face mask in crowded place.									
Agree	1991	(98.7)	1183	(98.1)	808	(99.6)	9.053	2	0.011
Undecided	11	(0.5)	10	(0.8)	1	(0.1)			
Disagree	15	(0.7)	13	(1.1)	2	(0.2)			
It is important to wash hands and face after coming outdoors.									
Agree	2006	(99.5)	1197	(99.3)	809	(99.8)	3.492	2	0.174
Undecided	5	(0.2)	5	(0.4)	0	(0.0)			
Disagree	6	(0.3)	4	(0.3)	2	(0.2)			
COVID-19 is a preventable disease.									
Agree	1829	(90.7)	1091	(90.5)	738	(91.0)	4.211	2	0.122
Undecided	109	(5.4)	60	(5.0)	49	(6.0)			
Disagree	79	(3.9)	55	(4.6)	24	(3.0)			
It can be treated at home.									
Agree	1158	(57.4)	686	(56.9)	472	(58.2)	1.995	2	0.369
Undecided	240	(11.9)	137	(11.4)	103	(12.7)			
Disagree	619	(30.7)	383	(31.8)	236	(29.1)			
Health education can play an important role in COVID-19 prevention.									
Agree	1928	(95.6)	1148	(95.2)	780	(96.2)	1.805	2	0.406
Undecided	52	(2.6)	32	(2.7)	20	(2.5)			
Disagree	37	(1.8)	26	(2.2)	11	(1.4)			

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Furthermore, 55.2% of respondents had more frequent practices towards the COVID-19. The proportion of more frequent practices were significantly more likely to be (i) female (59.2% vs. 52.6% in male, $p = .003$), (ii) older (age > 30 years) (64.0% vs. 48.6% in aged 12–20 years, $p < .001$), (iii) have higher education (63.6% vs. 35.0% in secondary [6th–10th grades], $p < .001$), (iv) be a housewife (68.8% vs. 52.2% in students, $p = .001$), (v) have monthly family income 20,000–30,000 BDT (57.9% vs. 48.6% in those < 20,000, $p = .002$), (vi) be a respondent from urban area (58.7% vs. 47.2% in those from rural areas, $p < .001$), and (vii) have more positive attitudes (58.6% vs. 49.7% in comparatively less positive attitudes, $p < .001$) (see Table 6).

The sociodemographic factors of more frequent practices were sex (males vs females: OR = 0.76; 95%CI = 0.64–0.92, $p = .003$), being younger (12–20 years) vs. older (> 30 years) (OR = 0.53; 95%CI = 0.38–0.75, $p < .001$), having secondary (6th–10th grades) vs. higher education (above bachelor) (OR = 0.31; 95%CI = 0.12–0.79, $p = .014$), having monthly family income less than 20,000 vs. more than 30,000 BDT (OR = 0.71; 95%CI = 0.57–0.88, $p = .001$), rural vs. urban area (OR = 0.63; 95%CI = 0.52–0.76, $p < .001$), and having more vs. comparatively less positive attitudes (OR = 1.43; 95%CI = 1.19–1.71, $p < .001$) (see Table 6).

Discussion

This study was conducted aiming at measuring the level of knowledge, attitude, and practice of COVID-19 and perceptions regarding the disease among Bangladeshi people. The findings

Table 5. Practice and gender difference of participants (N = 2017).

Variables	Total N = 2017		Male		Female		χ^2	df	p-value
	n	(%)	n	(%)	n	(%)			
Do you use tissues or hanker chips during coughing/sneezing?									
Yes	1549	(76.8)	886	(73.5)	663	(81.8)	23.392	2	<0.001
No	74	(3.7)	59	(4.9)	15	(1.8)			
Sometimes	394	(19.5)	261	(21.6)	133	(16.4)			
Do you wash hands frequently using water and soaps?									
Yes	1891	(93.8)	1116	(92.5)	775	(95.6)	7.570	2	0.023
No	14	(0.7)	10	(0.8)	4	(0.5)			
Sometimes	112	(5.6)	80	(6.6)	32	(3.9)			
Do you avoid touching face and eyes?									
Yes	1228	(60.9)	734	(60.9)	494	(60.9)	0.118	2	0.943
No	154	(7.6)	94	(7.8)	60	(7.4)			
Sometimes	635	(31.5)	378	(31.3)	257	(31.7)			
Do you maintain social distance (or home quarantine)?									
Yes	1831	(90.8)	1051	(87.1)	780	(96.2)	47.237	2	<0.001
No	41	(2.0)	34	(2.8)	7	(0.9)			
Sometimes	145	(7.2)	121	(10.0)	24	(3.0)			
Do you eat healthy food focusing on outbreak?									
Yes	760	(37.7)	464	(38.5)	296	(36.5)	0.806	1	0.369
No	1257	(62.3)	742	(61.5)	515	(63.5)			
Sometimes	0	(0.0)	0	(0.0)	0	(0.0)			
Do you maintain a healthy lifestyle focusing on outbreak?									
Yes	1698	(84.2)	982	(81.4)	716	(88.3)	17.779	2	<0.001
No	19	(0.9)	15	(1.2)	4	(0.5)			
Sometimes	300	(14.9)	209	(17.3)	91	(11.2)			
Do you obey all government rules related to the COVID?									
Yes	1784	(88.4)	1030	(85.4)	754	(93.0)	29.710	2	<0.001
No	39	(1.9)	25	(2.1)	14	(1.7)			
Sometimes	194	(9.6)	151	(12.5)	43	(5.3)			

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reveal a substantial number of sociodemographic factors that affect KAP and should prove useful when planning health education programs about emerging infectious diseases.

In the scope of perception towards COVID-19, the vast majority of the study participants reported some of the commonest symptoms related to COVID-19 [28], with only a very small minority being unaware of any of the symptoms, similar to other studies elsewhere [19, 29]. Knowledge about the incubation period was also excellent and similar (86.2%) to the study conducted by Zegarra et al. [29]. Similarly, routes of transmission of COVID-19 were reported by the participants: with only a minimal minority (0.2%) participants not being sure or unable to recognize transmission routes. Perception of COVID-19 severity in the community showed that only 13.8% did not face any difficulty when they discussed and tried to convince their family members about COVID-19 severity. Most of the responses by the participants indicated negligence about the severity of the disease, reluctance to use masks, and the reluctance of complying with not being able to stop going out of the house. This may imply less participation in the preventive measures stipulated by the government as well as less inclination to observe social distancing and other individual preventive actions, although some alternative adaptive strategies were also mentioned. The most frequently identified gap in knowledge among participants was related to disease treatment. Only 18.3% of participants believed that

Table 6. Distribution and risk factors of knowledge, attitude and practice among participants.

Variables	Knowledge					Attitudes					Practices													
	Less accurate		More accurate		OR	95%CI	P value	Less positive		OR	95%CI	P value	Less frequent		OR	95%CI	P value							
	N	(%)	N	(%)				N	(%)				N	(%)										
Gender																								
Male	626	(51.9)	580	(48.1)	0.046	0.081	0.821	472	(39.1)	734	(60.9)	2.715	0.536	0.712–1.030	0.100	572	(47.4)	634	(52.6)	8.383	0.003	0.003		
Female	417	(51.4)	394	(48.6)	Ref.			288	(35.5)	523	(64.5)	Ref.			Ref.	331	(40.6)	480	(59.2)	Ref.				
Age (years)																								
12–20	340	(50.7)	331	(49.3)	7.100	1.538	0.098–2.135	0.012	306	(44.9)	370	(55.1)	25.841	0.467	0.325–0.611	<0.001	345	(51.4)	326	(48.6)	20.473	0.277–0.546	<0.001	
21–30	594	(50.9)	574	(49.1)	1.537	1.106	0.010–2.108	0.010	410	(35.3)	758	(64.9)	0.702	0.495	0.084–0.997	0.008	494	(42.3)	674	(57.7)	0.766	0.532–1.083	0.110	
>30	109	(61.2)	69	(38.8)	Ref.			49	(27.5)	129	(72.5)	Ref.			Ref.	64	(36.0)	114	(64.0)	Ref.				
Education																								
Secondary (6–10)	8	(40.0)	12	(60.0)	4.347	1.419	0.571–3.527	0.451	9	(45.0)	11	(55.0)	47.791	0.427	0.173–1.051	0.173	0.064	13	(65.0)	7	(35.0)	23.415	0.308–0.786	0.014
Intermediate (11–12)	117	(51.8)	109	(48.2)	0.881	0.646	0.426–1.202	0.476	118	(52.2)	120		0.381	0.276	0.084–0.538	<0.001	110	(48.7)	116	(51.3)	0.604	0.441–0.827	0.002	
Bachelor	635	(53.3)	575	(46.7)	0.830	0.678	0.072–1.017	0.609	727	(59.1)			0.505	0.404	0.081–0.631	<0.001	583	(47.4)	647	(52.6)	0.636	0.516–0.792	<0.001	
Higher education (above bachelor)	263	(44.6)	278	(51.4)	Ref.			140	(25.9)	401	(74.1)	Ref.			Ref.	197	(36.4)	344	(63.6)	Ref.				
Marital status																								
Single	835	(51.2)	795	(48.8)	1.659	0.571	0.136–2.738	0.394	643	(39.4)	987	(60.6)	18.912	2.538	0.489	0.199	0.092	751	(46.1)	879	(53.9)	5.854	0.767–2.548	0.629
Married	205	(84.1)	174	(43.9)	0.309	0.120	0.360–2.160	0.112	(29.6)	267	(70.4)	0.001	0.014	0.002	0.002	149	(39.3)	230	(60.7)	0.854	0.626–1.160	0.917		
Divorced	3	(37.3)	5	(62.7)	Ref.			5	(62.3)	3	(37.7)	Ref.			Ref.	3	(37.5)	5	(62.5)	Ref.				
Occupation																								
Student	733	(51.0)	704	(49.0)	5.584	1.633	0.740–3.590	0.223	601	(41.8)	856	(58.2)	40.308	0.397	0.159	0.088	667	(47.6)	790	(52.2)	20.203	0.873–1.869	0.729	
Housewife	40	(62.5)	24	(37.5)	1.020	0.402	0.967–2.587	0.967	14	(21.9)	50	(78.1)	1.020	0.345	0.084–3.016	0.971	20	(31.3)	44	(68.8)	1.760	0.698–4.638	0.231	
Govt. employee	59	(44.4)	63	(51.6)	1.815	0.770	0.173–4.281	0.173	38	(31.1)	84	(68.9)	0.632	0.236	0.081–1.081	0.360	46	(37.7)	78	(62.3)	1.322	0.509–3.070	0.517	
Non govt. employee	165	(52.4)	150	(47.6)	1.545	0.686	0.293–3.480	0.293	82	(26.0)	213	(74.0)	0.812	0.317	0.064–2.082	0.118	(37.5)	197	(62.5)	1.336	0.605–2.951	0.174		
Businessman	29	(55.8)	23	(44.2)	1.344	0.519	0.519–3.499	0.519	19	(65.5)	33	(63.5)	0.496	0.170	0.199	0.170–1.445	0.199	20	(38.5)	32	(61.5)	1.300	0.499–3.265	0.608
Unemployed	17	(63.0)	10	(37.0)	Ref.			6	(22.2)	21	(77.8)	Ref.			Ref.	12	(44.4)	15	(55.6)	Ref.				
Family type																								
Nuclear	809	(51.5)	763	(48.5)	0.175	1.046	0.847–1.291	0.676	612	(38.9)	960	(61.1)	4.731	0.782	0.626–0.976	0.029	707	(45.0)	865	(55.0)	0.121	0.363–1.190	0.728	
Joint	234	(52.6)	211	(47.4)	Ref.			148	(33.3)	297	(66.7)	Ref.			Ref.	196	(44.0)	249	(56.0)	Ref.				
No. of family member																								
																		Continued						

(Continued)

Table 6. (Continued)

Variables	Knowledge					Attitudes					Practices				
	Less accurate N (%)	More accurate N (%)	χ^2	OR	95%CI p-value	Less positive N (%)	More positive N (%)	χ^2	OR	95%CI p-value	Less frequent N (%)	More frequent N (%)	χ^2	OR	95%CI p-value
Gender															
<5	746 (51.5)	703 (48.5)	0.106	1.033	0.830–1.294	553 (38.2)	896 (61.8)	0.514	0.929	0.760–1.106	631 (43.5)	818 (56.5)	3.108	1.191	0.861–1.617
≥5	297 (51.3)	271 (47.7)	Ref.			207 (56.4)	361 (63.6)		Ref.		272 (47.9)	296 (52.1)		Ref.	
Monthly family income															
<30,000 BDT	256 (50.0)	256 (50.0)	14.12	1.066	0.861–1.318	246 (42.2)	246 (57.8)	8.239	0.732	0.389–1.411	263 (51.4)	249 (48.6)	12.147	0.207	0.571–0.801
30,000–100,000 BDT	267 (53.7)	230 (46.3)	0.494	0.914	0.740–1.136	193 (38.4)	304 (61.6)	0.086	0.941	0.674–1.318	209 (42.1)	288 (57.9)	0.002	0.828	0.795–0.861
>100,000 BDT	530 (51.6)	488 (48.4)	Ref.			351 (54.4)	657 (65.6)		Ref.		431 (62.8)	577 (57.2)		Ref.	
Residence															
Rural area	288 (47.2)	322 (52.8)	7.683	1.295	1.070–1.566	238 (39.0)	372 (61.0)	0.665	0.922	0.754–1.121	322 (52.8)	288 (47.2)	22.733	0.629	0.520–0.762
Urban area	735 (51.7)	682 (48.3)	Ref.			522 (37.1)	865 (62.9)		Ref.		381 (41.3)	528 (58.7)		Ref.	
Knowledge															
More accurate	0 (0)	974 (100.0)	—	—	—	372 (38.2)	602 (61.8)	0.211	0.959	0.801–1.148	424 (43.5)	550 (56.5)	1.167	1.102	0.924–1.313
Less accurate	1043 (100.0)	0 (0.0)	—	—	—	388 (37.2)	655 (62.8)	0.646	Ref.		479 (45.9)	564 (54.1)		Ref.	
Attitude															
More positive	635 (51.1)	602 (47.9)	0.211	0.959	0.801–1.148	0 (0.0)	1,237 (100.0)	—	—	—	521 (41.4)	736 (58.6)	14.485	1.438	1.191–1.711
Less Positive	388 (51.1)	372 (48.9)	Ref.			760 (100.0)	0 (0.0)				382 (56.3)	298 (43.7)		Ref.	
Practice															
More frequent	564 (50.6)	550 (49.4)	1.167	1.102	0.924–1.313	378 (33.9)	736 (66.1)	14.885	1.428	1.191–1.711	0 (0.0)	1,114 (100.0)	—	—	—
Less frequent	479 (53.0)	424 (47.0)	Ref.			382 (42.3)	521 (57.7)	<0.001	Ref.		903 (100.0)	0 (0.0)			

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Article

Preparedness and Preventive Behaviors for a Pandemic Disaster Caused by COVID-19 in Serbia

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Abstract: Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2. The disease was first detected in Wuhan, the capital of China's Hubei province, in December 2019 and has since spread globally, especially to Europe and North America, resulting in the ongoing global coronavirus pandemic disaster of 2019–2020. Although most cases have mild symptoms, there is some progression to viral pneumonia and multi-organ failure and death. More than 4.6 million cases have been registered across 216 countries and territories as of 19 April 2020, resulting in more than 311,000 deaths. Risk to communities with continued widespread disease transmission depends on characteristics of the virus, including how well it spreads between people; the severity of resulting illness; and the medical or other measures available to control the impact of the virus (for example, vaccines or medications that can treat the illness) and the relative success of these. In the absence of vaccines or medications, non-pharmaceutical interventions were the most important response strategy based on community interventions such as person-to-person distancing, mask-wearing, isolation and good personal hygiene (hand-washing)—all of which have been demonstrated can reduce the impact of this seemingly unstoppable globally spreading natural disaster. This paper presents the results of quantitative research regarding the level of citizen preparedness for disasters caused by coronavirus disease (COVID-19) in Serbia. The survey was conducted using a questionnaire that was requested and then collected online among 975 respondents during disaster in April 2020. The questionnaire examined citizens' basic socio-economic and demographic characteristics, their knowledge, preparedness, risk perception and preventive measures taken individually and as a community to prevent the death and widespread transmission of novel coronavirus disease 2019 in the Republic of Serbia. Based on the findings that there are major differences in the public's perception of risks posed by communicable disease threats such as presented by COVID-19, emergency management agencies should use these differences to develop targeted strategies to enhance community and national preparedness by promoting behavioral change and improving risk management decision-making.

Keywords: disaster; epidemic risk; pandemic; citizen preparedness; coronavirus; COVID-19; Serbia

1. Introduction

COVID-19 is a new strain of coronavirus that has not been previously identified in humans. Coronaviruses are zoonotic and are a large family of viruses that cause illness ranging from the common colds to more serious diseases, such as MERS and SARS [1]. Compared with SARS and MERS, COVID-19 has spread more rapidly, mainly due to increased globalization and the focus of the epidemic [2]. COVID-19 may have acted differently from previous coronavirus epidemics. Firstly, the lack of organized, systematic and scientific knowledge about COVID-19 caused anxieties on the part of individuals and governments as they were facing an unseen enemy around the world [3]. In addition, the main phenotype of this outbreak is the high rate of spread, age and increased vulnerability of low immune individuals and the differential rate of recovery [4].

On 7 January 2020, the Chinese CDC isolated a novel coronavirus from the throat swab of a patient with pneumonia of unknown etiology. The new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019, but the novel virus was identified by the World Health Organization (WHO) as the 2019-novel Coronavirus (nCoV). On 11 February 2020, WHO formally named the disease caused by SARS-CoV-2 virus as “COVID-19” [5]. Two pathogenic coronaviruses were mainly known before December 2019. One is severe acute respiratory coronavirus syndrome (SARS-CoV) and the other is Middle East respiratory coronavirus syndrome (MERS-CoV). SARS was first identified in China in 2002, with 32 countries reporting cases worldwide and 8442 people infected with SARS, of whom 916 died, for a case-fatality rate (CFT) of 11% worldwide, but the CFT was 27% in China [1]. MERS was identified in the Middle East (Saudi Arabia) region in 2012. By the end of November 2019, a total of 2494 laboratory-confirmed cases of MERS, including 858 related deaths (case-fatality rate: 34.4%) were reported in 27 countries; the majority of these cases were reported from Saudi Arabia [1]. Other known coronaviruses (HCoV-OC43, HCoV-229E, HCoV-NL63, HCoV-HKU1) induce mild or asymptomatic upper respiratory tract disease like the common cold [6].

The outbreak of COVID-19 spread far faster than before around the world. As of 11 February 2020, there have been 43,118 laboratory-confirmed cases of novel coronavirus (2019-nCoV) infected pneumonia (NCIP) worldwide, with 1,018 deaths [7]. Cases have been reported from 14 Asian countries, nine European countries, two North American countries and one country in Oceania. There have been 1017 deaths in China and 1 in the Philippines outside of China [7]. All reported cases have been confirmed by real-time reverse transcriptase-polymerase chain reaction [8,9].

The total global number of COVID-19 cases has exceeded 4.6 million, and total number of death is 311,847 [10]. Since the declaration of COVID-19 as a public health emergency of international concern, the number of countries implementing additional health measures that significantly interfere with international traffic has increased. COVID-19 is a new disease that is distinct from other SARS, MERS, and influenza diseases. Although coronavirus and influenza infections may have similar symptoms, the virus responsible for COVID-19 differs in terms of community spread and severity. Much remains to be discovered about the disease and its impact in different contexts. Preparedness, readiness, and response actions will continue to be driven by the rapid accumulation of scientific and public health knowledge.

Every country should urgently take all necessary measures to slow further spread and prevent its health systems from being overwhelmed by seriously ill patients with COVID-19. Although the government was convinced that Serbia would not be largely affected by the COVID-19, the state of emergency was declared on 15 March, not long after the first case had been registered. The first officially registered case on 6 March is most likely to be imported from Budapest, as the male patient in question visited his ill sister (with “respiratory problems, fever and other COVID-19 symptoms”), as stated by the Minister of Health Zlatibor Lončar [11]. Subsequently, a significant number of provisions and orders were made, among the most important ones [12]: compulsory 28-day self-isolation was imposed for anyone entering the country on 14 March 2020 and later.

Social media and networks monitoring and addressing's of the government representatives clearly indicated difficulties in complying with the envisaged measures, particularly in the first weeks

leading up to the state of emergency. This could probably have been the result of changes of point of view in this less than a month long period, which could lead to the confusion among the general public [12]. Although Serbian officials followed WHO Guidelines and collaborated with the experts from the China following the declaration of the state of emergency, and have urged Serbian citizens to do the same, the public was not prepared for an epidemic. Even though history testifies to a small number of serious epidemics and researchers have found evidences of poor knowledge and preparedness of Serbian public about epidemics [13,14] and infectious agents used as biological weapons [15], little has been done to prevent epidemics and pandemics. Given that Serbia suffered great losses in the May 2014 floods, the most of the government attention was focused to emergency management in general. However, the right to education in emergency situations was not affirmed and recognized in the past [16]. The need to conduct a survey on the preparedness of citizens for outbreaks of a major epidemiological significance (declared on 19 March) on the territory of the Republic of Serbia has therefore been recognized.

1.1. Literature Review

Understanding individuals' behavior and their relationship to their perceived risk is important in terms of effective control of an outbreak of infectious diseases [17]. Some studies have examined risk perceptions and precautionary behaviors during the early stages of the 2009 (H1N1) influenza pandemic in Hong Kong [18,19], Australia [20], France [21,22], and the England, Scotland, and Wales [20]. These studies found that precautionary behaviors were associated with anxiety about H1N1 influenza, risk perceptions, perceived efficacy of the precautionary behaviors [19,23].

There are some scientific studies related to perceptions of people about pandemic diseases, their precautions and preparations. Balicer et al. [24] conducted a study to understand local public health workers' perceptions of pandemic influenza response. They surveyed 308 staff at three health departments in Maryland from March–July 2005, about factors that could influence their ability and willingness to report to duty in this event. The study demonstrated that almost half of the local health department workers were likely not to report to duty during a pandemic. The perceived risk among public health workers has been shown to be associated with several factors that are peripheral to the actual hazard of this event. These changes in the risk perception and the knowledge gaps identified serve as barriers to the response to a influenza pandemic and must be specifically addressed to enable effective local public health response to this significant threat. Barr et al. [25], investigated how a population perceives the threat of influenza pandemic, and what was their preparedness to comply with specific public health behaviours in the event of pandemic influenza.

The survey was completed on a representative sample of 2081 adults. In the event of a flu pandemic, the majority of the population was willing to be vaccinated (75.4%), be isolated (70.2%), and wear a face mask (59.9%). People with higher levels of risk perception are significantly more likely to be willing to comply with specific public health behaviours. While only 14.9% of the New South Wales (Australia) population thought that a pandemic influenza was very or extremely likely to occur, a significantly higher proportion of the population and the family were concerned if a pandemic actually occurred. Ibuka et al. [26] assessed temporal changes and geographical differences in risk perceptions and precautionary behaviors in response to H1N1 influenza. An online survey of risk perceptions, interests in pharmaceutical interventions (preventive intervention and curative intervention), and involvement in precautionary activities (information seeking activities and taking quarantine measures) in response to H1N1 influenza was conducted in 2009. Geographical differences in risk perception and precautionary behaviors have been evaluated. Predictors of willingness to take part in a pharmaceutical intervention were analyzed. The perceived likelihood of influenza infection, willingness to take drugs, and involvement in information seeking activities was higher for women than men. The perceived risk of infection and precautionary behavior can be dynamic over time, and differ by demographic characteristics and geographical locations. These patterns are likely to influence the effectiveness of disease control measures. Park et al. [27] conducted a study to assess the perceptions,

motivational factors and behaviors associated with the use of hand washing to prevent H1N1 influenza transmission during the peak pandemic period in Korea. They reached the point that Korean students increased their frequency of hand hygiene practices during the pandemic, with significant gender differences existing in the attitudes and behaviors related to the use of hand hygiene as a means of disease prevention. The factors that affected hand washing behavior were similar to those identified at the beginning of the H1N1 or SARS pandemics, suggesting that public education campaigns regarding hand hygiene are effective in altering individual hand hygiene habits during the peak periods of influenza transmission.

Kwok et al. [28] examined the community's psychological and behavioral responses during the early phase of the Hong Kong epidemic of COVID-19. Analysis of 1715 complete responses indicated high perceived susceptibility (89%) and high perceived severity (97%). Most of the respondents were worried about COVID-19 (97%), and had their daily routines disrupted (slightly/greatly: 98%). The level of anxiety, measured by the Hospital Anxiety and Depression Scale, was borderline abnormal (9.01). Almost all respondents were alert to the disease progression (99.5%). The most reliable sources of information were doctors (84%), followed by broadcasts (57%) and newspapers (54%), but they were not common sources of information (doctor: 5%, broadcast: 34%, newspaper: 40%). Only 16% respondents found official websites to be reliable. Enhanced personal hygiene and travel-avoidance practices to China have frequently been adopted (>77%) and considered effective (>90%). The adoption of social-distancing measures was lower (39–88%), and their drivers for increased adoption include: being female (adjusted odds ratio [aOR]:1.27), living in the New Territories (aOR:1.32–1.55), perceived as having good understanding of COVID-19 (aOR:1.84) and being more anxious (aOR:1.07).

Gilbert et al. [29] assessed the preparedness and vulnerability of African countries to their risk of importation of COVID-19. The risk of importation from China of cases of COVID-19 to Africa was estimated on the basis of the origin–destination air travel flows from January 2019; number of cases in Chinese provinces; and the population in each of the Chinese provinces that reported transmission. They identified the country's capacity to detect and respond to cases with two indicators: preparedness, and vulnerability. Countries were clustered according to the Chinese regions that contributed most to their risk. The authors identified three clusters of countries (i.e., Egypt, Algeria, and South Africa) that share the same risk exposure from the provinces of Guangdong, Fujian and Beijing. Countries at moderate risk (i.e., Nigeria, Ethiopia, Sudan, Angola, Tanzania, Ghana, and Kenya) have variable capacity and high vulnerability.

As the classic Health Belief Model (HBM) and other models for health psychology indicate, risk perceptions have been seen as one of key drivers of health behaviors [30]. In the HBM, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (individual beliefs in disaster preparedness) predict individual behavior [31].

1.2. Epidemic Hazard in Serbia

During the Crusades (1096–1291), the territory of the Republic of Serbia was affected by a leprosy epidemic that claimed several dozen human lives in the Balkans. Then, in the Middle Ages, the plague occurred on several occasions (1348, 1362, 1428, 1430 and 1438), with the most recent cases being recorded between 1836 and 1838 [32]. Although the borders in Balkans have often been moved and outbreaks of infectious diseases are not uncommon, over the last century three major outbreaks have been linked to the geographical area of the Republic of Serbia. Firstly, during the First World War, the Serbian army and public were greatly affected by typhus. The second was a smallpox epidemic of in Socialistic Federative Republic of Yugoslavia (SFRY) in 1972, “the biggest post-war outbreak in Europe”; and, lastly, the tularemia outbreaks during the 1990s [33].

The lack of time and resources to recover from the losses caused by the Balkan wars (1912–1913), the epidemics of typhoid, recurrent and especially freckled typhus (besides dysentery, measles, diphtheria, scarlet fever, smallpox, etc.), have consequently spread all over Serbia and caused losses that no other people and army suffered during the First World War [34]. World Health Organization

(WHO) developed a major eradication plan for *Variola major* in 1967, and 10 years later the last case of smallpox was registered in Somalia. However, the last large outbreak in Europe occurred in 1972 in Yugoslavia, with 175 cases and 35 deaths [35,36]. Before eradication, the last case of smallpox in Serbia was recorded in 1930, with the last lethal consequence in 1926. Although 38,963 people lost their lives in smallpox epidemics between 1896 and 1910 for many years, medical personnel were not trained, prepared and experienced at the time of the outbreak of smallpox [33]. Nevertheless, despite organizational, technical and other weaknesses, the epidemic was quickly brought under control within four weeks after the detection of the first case by vaccination of whole SFRY population (about 18 million citizens) which began on 16 March, surveillance and movement restrictions [33].

Although the first human infection in SFRY was reported in 1947 and the disease occurred sporadically in Serbia, the first outbreak of tularemia in Serbia was recorded in late 1998 in the Sokobanja region. The epidemic lasted until 1999 and 2000, with oropharyngeal tularemia as the dominant form of the disease. Subsequently, minor tularemia outbreaks occurred in the district of Pčinja in 2010, Gazdin Han in 2014 and in 2015 in the natural foci of the disease—Stara planina, Suva planina, and Rtanj and Kopaonik mountains [33]. The recent history of the Republic of Serbia also records the flu epidemic in 2009/2010, at the time of pandemic. The population surveillance reported 190,563 (2.5%) of patients with clinically manifest flu symptoms between 26th week of 2009 and the 13th week of 2010. 6021 patients were hospitalized for influenza-like illnesses, among which influenza was laboratory confirmed at 553. Among those hospitalized, 137 deaths were reported (mortality rate—2.3%), 122 of which had influenza as the cause of death, and 15 died as a result of complications of chronic illness following influenza [37]. Although Ristanović [33] argued that smallpox epidemics, as well as other epidemics mentioned above, should have provided sufficient warning and improved preparedness for response, and rare studies have shown that this is not the case. In the context of general public's preparedness for epidemics, Cvetković et al. [13] have shown that "less than half of respondents know what epidemics are and how to protect themselves against epidemics". Another interesting testimony about Serbia's poor public knowledge of infectious diseases was found.

The aim of this paper was to establish the level and impact of certain demographic characteristics of preparedness and preventive behavior in the event of a pandemic disaster caused by COVID-19 in Serbia.

2. Methods

The research was designed to identify adults' preparedness behaviours during the epidemic of COVID-19 in Serbia, with the result that all participants were Serbian residents over 18 years of age. Due to the extraordinary circumstances of the COVID-19 pandemic, in particular the restriction of movement and the need for social distance, the data collection for this study had to be conducted via the on-line survey platform (google.doc). Namely, the study was conducted in April, 2020, only two weeks after the state of emergency was declared, ensuring that the researchers complied with movement restrictions and the need for social distancing. The participants were invited to complete the on-line questionnaire in their native language by using the snowball sampling method.

2.1. Study Area

The Republic of Serbia is located at the crossroads of Central and South-Eastern Europe in the Southern Pannonian Plain and the central Balkans and covers an area of 88,499 km². It borders Hungary to the north, Romania to the northeast, Bulgaria to the southeast, North Macedonia to the south, Montenegro to the southwest and Croatia and Bosnia and Herzegovina to the west. Also, the disputed territory of Kosovo in the south of the country, borders with Albania to the south-southwest. According to the 2011 census, there were 7,186,862 inhabitants in the Republic of Serbia, of whom 3,499,176 were male and 3,687,686 were female. Almost one third of population is concentrated in just 5% of the territory (the metropolitan area of Belgrade and regional centers as Novi Sad, Niš and Kragujevac), while more than 35% of the territory is well below the average population density (up to 50

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inhabitants/km²). Over 1.7 million of Serbian residents were retired, 1.2 million were 65 years of age or older, more than 800,000 were officially unemployed, and more than 570,000 people had some kind of disability [38]. It is also important to note that Serbia is a country in transition, with the official position of the government being to become part of the European Union.

2.2. Socio-Economic and Demographic Characteristics

As an initial invitation to participate in an online questionnaire was posted on social media and sent to the authors' contacts and their contacts, the sample was convenient and not necessarily representative of the Serbian population. Of 975 respondents total, 76.6% were women and 23.4% men (women 51.3% and men 48.7% of the total country population). The average age of respondents was 27 years old and the most represented category was 18–28 years old (708; 72.6%) while the least elderly were 49–58 (51; 5.2%) (average age of the population 42.6 years (men 41.2 and women 43.9)). From the sample, it appears that the majority (57.2%) had undergraduate educational degrees, and very few only completed primary school (0.3%) (with primary sch. 20.76%, high sch. 48.93%, junior college 4.51%, and undergraduate 10.59% of the population). In the household sample in a relationship people account for 39.4%, widow/widower 0.9%, and married rate of 13.8%. The interviewees selected also reflected different status of disability, with 7.7% of the individuals reporting some type of disability or chronically illness and 92.3% reporting lack of disability. In addition, the majority (44%) of respondents had monthly household income of more than 741\$ (Table 1).

Table 1. Basic socio-economic and demographic information of respondents (n = 975).

Variable	Category	Frequency (%)	Variable	Category	Frequency (%)
Gender	Male	228 (23.4)	Disability	Yes	75 (7.7)
	Female	747 (76.6)		No	900 (92.3)
Age	18–28	708 (72.6)	Monthly income	Up to 275\$	96 (9.8)
	29–38	126 (12.9)		275 to 465\$	210 (21.5)
	39–48	90 (9.2)		466 to 740\$	240 (24.6)
	49–58	51 (5.2)		Over 741\$	429 (44)
	Single	423 (43.4)		Primary sch.	3 (0.3)
Marital status	In a relationship	384 (39.4)	Education	High-school	240 (24.6)
	Married	135 (13.8)		Junior college	63 (6.5)
	Divorced	21 (2.2)		Undergraduate	558 (57.2)
	Widow	9 (0.9)		Master/doctorate	108 (11.0)
TOTAL			975 (100)		

2.3. Questionnaire Design

The structured questionnaire was developed using close-ended and 5-point Likert scale questions (1 strongly disagree to 5 strongly agree). The first part of the questionnaire included the socio-demographic characteristics of the interviewees in order to assess the social background and gender of the respondents. Subsequent sections included issues questions related to *knowledge, preparedness, risk perception and information sources, and preventive measures for coronavirus disease* (Appendix A). Several published survey approaches were consulted [13,14,17,19,27,28,39] and adapted according to the circumstances of the COVID-19 pandemics in Serbia. A pilot pre-test of the questionnaire was conducted in Belgrade (central Serbia) in April 2020 with 45 people to test the comprehensibility and performance of the questionnaire via online systems. Our research was consistent with the Helsinki Declaration outlining the principles for socio-medical research involving human subjects. Participants provided informed consent to participate in the study. The research protocol was approved by the committees of scientific research group review board of Scientific-Professional Society for Disaster Risk Management, ID-04052020.

2.4. Analyses

Descriptive statistics were calculated for the demographic characteristics of the participants in this study. The analysis of variance (one-way ANOVA with Post hoc Tests-Supplementary), Chi-square test and the regression analysis were used to examine the relationship between the variables and preparedness scores of the participants. All tests were two-tailed, with a significance level $p < 0.05$. Statistical analysis was performed using SPSS Statistics 17.0 (IBM SPSS Statistics, New York, NY, USA). The internal consistency of Likert scales for Preparedness Subscale (24 items) is good with a Cronbach's alpha of 0.89, for Preventive Measurement Subscale (20) 0.87, Risk Perception Subscale (13 items) 0.83.

3. Results

The results were based on knowledge, preparedness, risk perception and preventive measures for coronavirus disease. Starting from the abovementioned methodological framework, the results were handled into four categories:

Firstly, we tested the central hypothesis that gender, educational level and age were predictive variables of citizen preparedness for a pandemic disaster. Multivariate regression analysis was used to determine the extent to which four scores of the subscales (knowledge, preparedness, risk perception, preventive measures) were associated with six socio-economic variables: gender, age, marital status, education level, disability, and monthly income. Analyses showed that the assumptions of normality, linearity, multicollinearity and homogeneity of variance had not been violated.

The results of the multivariate regressions of preparedness subscale showed that the most important predictor is disability ($\beta = 0.091$), and explains 9.1% variance in preparedness [40]. The remaining variables (e.g., gender, age, marital status, income level) were not significantly affected by preparedness. This model ($R^2 = 0.17$, Adj. $R^2 = 0.11$, $F = 2.73$, $t = 4.95$, $p < 0.01$) with all mentioned independent variables explains the 11% variance of preparation (Table 2).

Table 2. Results of a multivariate regression analysis concerning subscales (preparedness, knowledge, risk perception, preventive measures) for coronavirus disease ($n = 975$).

Predictor Variable	Preparedness			Knowledge			Risk Perception			Preventive Measures		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Gender	1.35	0.71	0.063	0.136	0.128	0.035	0.260	0.397	0.022	4.88	0.949	0.167 **
Age	0.434	0.707	0.021	-0.297	0.127	-0.081 *	1.52	0.395	0.134 **	5.46	0.944	0.196 **
Marital status	-0.706	0.622	-0.039	-0.200	0.112	-0.061	-0.032	0.348	-0.003	0.507	0.830	0.020
Education level	-0.728	0.674	-0.035	-0.405	0.121	-0.107 **	-0.705	0.377	-0.060 *	1.15	0.899	0.040
Disability	14.9	5.29	0.091 *	-0.543	0.953	-0.018	-1.69	2.95	-0.018	-6.13	7.05	-0.027
Monthly income	1.26	0.990	0.042	0.212	0.178	0.039	0.886	0.553	0.052	2.74	1.32	0.066
Adjusted R^2	0.11			0.21			0.19			0.63		

* $p \leq 0.05$; ** $p \leq 0.01$; B: unstandardized (B) coefficients; SE: std. error; β : standardized (β) coefficients. Note: males, young, single-headed households, secondary-school respondents, low income and disabled people have been coded as 0; 1 has been assigned otherwise.

Further analyses showed that the most important predictor of knowledge subscale was the level of education ($\beta = -0.107$), explaining 10.7% of the variance, followed by age ($\beta = -0.081$, 8.1%) ($R^2 = 0.27$, Adj. $R^2 = 0.21$, $F = 4.43$, $t = 10.37$, $p < 0.01$). This model (with all mentioned independent variables) explains the 21% variance of knowledge. The remaining variables did not have a significant impact on knowledge (Table 2).

The analyses showed that the most important predictor of risk perception was age ($\beta = 0.134$) with 13.4% of variance followed by education level ($\beta = -0.060$, 6%). This model with all of the defined independent variables explains the 19% variance of risk perception ($R^2 = 0.25$, Adj. $R^2 = 0.19$, $F = 4.16$, $t = 16.47$, $p < 0.01$). The remaining variables did not have significant effects on the perception of risk (Table 2).

The most important predictor in preventive measures was age ($\beta = 0.196$) which explains 19.6% of variance followed by the gender ($\beta = 0.167$, 16.7%). This model with all independent variables

mentioned explains the 63% variance of preventive measures ($R^2 = 0.69$, Adj. $R^2 = 0.63$, $F = 11.9$, $t = 10.07$, $p < 0.01$). The remaining variables did not have significant effects on knowledge (Table 2).

3.1. Knowledge of Coronavirus Disease

In terms of basic knowledge, the respondents were offered statements and the possibility to “agree” or “disagree” (yes or no), when required, coded as 1 or 2, respectively. According to the results, 84.6% of respondents indicated that they had knowledge of epidemics, although 65.8% of them, when it comes to assessing their knowledge, confirmed zoonotic nature of coronavirus, which means that virus was transferred from animals to humans. Then, 71.4% of respondents said that at the end of 2019, COVID-19 virus occurred for the first time in human population in China. Most of the respondents (95.4%) thought coronavirus-related disease was infectious and 16.3% of the respondents stated that symptoms occur only after 14 days, while 91.7% of the respondents stated that symptoms occur within 0 to 28 days of infection/exposure to virus. When asked about symptoms occurring in infected persons, the majority of the respondents (98.2%) noted that common symptoms include fever, severe fatigue and dry cough. On the other hand, 68.3% of respondents believe that other symptoms include difficulty breathing, pain, diarrhoea, nausea and runny nose.

The results of Chi-square test showed that there was no relationship between self-perceived knowledge of COVID-19 and the variables examined. Contrarily, the relationship between COVID-19 was found to be zoonotic disease and educational level. Specifically, the respondents with completed masters/doctoral studies (75.7%) were more likely to have the above assertion compared to the respondents who graduated from junior college (37%). In addition, in relation to the argument that the coronavirus appeared first in China, a statistically significant association with education was found in such a way that university level respondents (75.8%) agreed with the above-mention statement, mainly in relation to high-school level respondents (56.6%). A significant statistical correlation was found between this belief that COVID-19 was contagious and gender that women (96.4%) were more likely to agree with this statement than men (89.7%). A statistically significant correlation was observed between the opinion that the symptoms of COVID-19 would occur only after 14 days and the majority of respondents aged 49 to 58 years of age (50%) support this statement. On the other hand, the statement that symptoms may occur between 0 and 28 days after exposure to COVID-19 showed significant statistical association with the level of education and age of respondents. Elderly (55%) and high-school respondents (18.3%) agree to a greater extent than younger respondents (16%) and university graduates (15%). Finally, it was also found that agreement with the statement that other symptoms include difficulty breathing, pain, diarrhoea, nausea and runny nose were associated with educational level and age. Respondents with a university degree (83.8%) and elderly respondents (73.3%) support this statement to greater extent than those with high-school degree (71.4%) and younger respondents (65%) (Table 3).

Table 3. Chi-square test results between gender, education level, age variables and knowledge of COVID-19.

Variable	Gender		Education Level		Age	
	Sig. (2-Tailed)	χ^2	Sig. (2-Tailed)	χ^2	Sig. (2-Tailed)	χ^2
1. Self-perceived knowledge	0.369	0.287	2.62	0.134	2.59	0.065
2. The corona is zoonotic	2.01	0.157	17.28	0.002 *	5.32	0.256
3. First time in China	0.396	0.529	26.16	0.000 **	9.01	0.064
4. The disease is contagious	7.27	0.007 *	6.33	0.176	8.02	0.054
5. Symp. manifest after 14 days	0.733	0.392	8.62	0.021	13.57	0.009 *
6. Symp. manifest up to 28 days	3.62	0.067	38.05	0.000 **	25.40	0.000 **
7. Symp.: fever, fatigue and etc.	1.01	0.314	5.85	0.210	4.71	0.318
8. Other symptoms	3.97	0.054	18.01	0.001 **	29.33	0.000 **

* $p \leq 0.05$; ** $p \leq 0.01$.

3.2. Preparedness for Coronavirus Disease

Considering the importance of citizens' preparedness for responding to epidemic-induced disasters, the respondents were asked to rate the level of preparedness for the coronavirus epidemic on a scale of 1 to 5. On this occasion, the following descriptive results were obtained: individual preparedness ($X = 3.56$); household preparedness ($X = 3.58$); local government preparedness ($X = 2.76$); state preparedness ($X = 3.12$); individual knowledge for responding ($X = 3.41$); enough training for responding ($X = 3.11$); food supplies ($X = 3.42$); protective equipment ($X = 3.09$); response plans ($X = 3.14$); household knowledge ($X = 3.49$), training ($X = 3.26$), plans ($X = 2.56$); local community knowledge ($X = 2.72$), plans ($X = 2.56$), training ($X = 3.34$) and supplies ($X = 2.79$); state knowledge ($X = 3.28$), trainings ($X = 3.27$), supplies ($X = 3.58$), plans ($X = 3.18$); first responders preparedness ($X = 3.79$); healthcare institutions—knowledge ($X = 3.54$) and their supplies for responding ($X = 2.53$) (Table 4).

Table 4. One-way ANOVA results between gender, education level, and age variables and preparedness for coronavirus disease.

Variable	Mean	Std. Deviation	Gender		Education Level		Age	
			F	p	F	p	F	p
9. Individual preparedness	3.56	0.89	0.179	0.673	6.64	0.000 **	6.89	0.000 **
10. Household preparedness	3.58	0.93	1.31	0.252	3.44	0.008 *	2.14	0.094
11. Community preparedness	2.76	1.03	16.87	0.000 **	5.11	0.000 **	4.73	0.003 *
12. State preparedness	3.12	1.04	12.78	0.000 **	4.60	0.001 **	2.62	0.049 *
13. Enough personal knowledge	3.41	0.96	1.31	0.252	7.64	0.000 **	10.651	0.000 **
14. Enough personal training	3.11	1.07	3.98	0.047 *	6.98	0.000 **	10.66	0.000 **
15. Enough food supplies	3.42	1.13	7.06	0.008 *	8.95	0.000 **	14.663	0.000 **
16. Enough of req. prot. equipment	3.09	1.24	2.70	0.100	3.69	0.005 *	1.87	0.132
17. Personal response plans	3.14	1.07	0.716	0.398	10.95	0.000 **	5.66	0.001 **
18. Enough household knowledge	3.49	0.96	0.971	0.325	8.22	0.000 **	5.96	0.001 **
30. First responders preparedness	3.79	1.02	3.41	0.065	4.87	0.001 **	9.22	0.000 **

* $p \leq 0.05$; ** $p \leq 0.01$.

When the association between gender and different variables of preparedness to respond to disasters caused by COVID-19 was analyzed, it was found that women rate local communities and states at a higher level of preparedness, while level of training and food supply is ranked lower. Significant statistical association was found between the educational level and different variables of preparedness, with respondents who received a high-school degree noting highest scores for household, local community, members of the emergency services preparedness. Furthermore, respondents with completed masters or doctoral studies expressed the highest rates of self-assessed individual preparedness, training for adequate response, household-level plans. Besides that, junior college respondents noted the highest scores for state preparedness and the possession of sufficient food supplies. Finally, it was confirmed that university-level respondents reported the highest level of knowledge for adequate response and the possession of sufficient protective equipment (Table 4).

On the other hand, when the age of respondents was analyzed, it was determined that respondents aged 29 to 38 years have reported the highest rates of ownership of sufficient food supplies. Also, it is found that respondents aged 39 to 48 report highest scores for individual preparedness, the level of knowledge required for adequate response, and the level of household response knowledge. Preparedness of first responders was the best evaluated by the respondents aged 18 to 29. On the other hand, respondents aged 58 or older years assessed the level of disaster response training in question and having plans (Table 4).

3.3. Risk Perception and Informing of Coronavirus Disease

Starting with the importance of informing citizens on a timely basis of current risks regarding the coronavirus epidemic, respondents were asked to rate between 1 and 5 different ways of informing on a Likert scale from. The results of the survey showed that citizens get the most information online ($X = 4.23$), then TV ($X = 3.88$), family members ($X = 3.19$), friends ($X = 3.10$), members of first respondent

services ($X = 2.45$), scientific journals ($X = 2.33$), local community ($X = 2.22$), newspapers ($X = 2.02$), chosen physician ($X = 1.98$), government organizations ($X = 1.86$), radio ($X = 1.74$). As a result, in order to obtain needed information about the current status of the coronavirus epidemic, citizens the most frequently use the internet and radio were the least used. In relation to the source of information, the most reliable information was obtained by experts (epidemiologists, other physicians and experts in the field of disaster risk management) ($X = 4.35$), websites of international health organizations (WHO, Centers for Disease Control and Prevention, etc.) ($X = 3.48$), addresses of official state governance structures ($X = 3.87$), social networks ($X = 3.10$), communications from educational institutions ($X = 2.74$), national Institute of Public Health website ($X = 2.70$), websites of local medical institutions ($X = 2.47$) (Table 5).

Table 5. One-way ANOVA results of information sources of citizens and gender, education level, and age the variables on the risk perception of coronavirus disease.

Variable	Mean	Std. Deviation	Gender		Education Level		Age	
			F	p	F	p	F	p
33. Television	3.88	1.17	39.09	0.000 **	3.76	0.005 *	8.93	0.000 **
34. Radio	1.74	1.08	0.055	0.814	7.31	0.000 **	6.46	0.000 **
35. Newspaper	2.02	1.31	2.07	0.064	6.69	0.000 **	1.13	0.045
36. Internet	4.23	0.98	0.090	0.764	1.34	0.251	7.68	0.000 **
37. Scientific journal	2.33	1.44	0.036	0.849	4.18	0.002 *	5.11	0.001 **
38. Local medical website	2.47	1.37	23.26	0.000 **	7.55	0.000 **	5.25	0.001 **
41. Addressing of a statesman	3.67	1.23	103.23	0.000 **	5.04	0.011 *	17.20	0.000 **
42. Addressing of an expert	4.35	0.84	53.10	0.000 **	1.83	0.052	3.49	0.015
43. The social network	3.10	1.41	2.45	0.118	1.55	0.185	1.57	0.195
44. Family members	3.19	1.24	0.249	0.618	7.46	0.000 **	2.26	0.079
45. Friends	3.10	1.22	1.20	0.272	5.72	0.000 **	11.23	0.000 **
46. Local community	2.22	1.23	0.560	0.454	4.65	0.001 **	0.218	0.884
47. Chosen physician	1.98	1.30	814	0.314	8.27	0.000 **	2.61	0.090
48. First responders	2.45	1.38	668	0.184	8.37	0.000 **	14.75	0.000 **
49. Non-government org.	1.96	1.10	0.853	0.356	8.96	0.000 **	3.43	0.017
50. Educational institutions	2.74	1.39	6.47	0.11 *	14.33	0.000 **	19.00	0.000 **

* $p \leq 0.05$; ** $p \leq 0.01$.

By examining the relationship between gender and various variables of information sources, it was found that men are mostly informed via television. On the other hand, women are mostly informed through the websites of local medical institutions, and most believe the information provided through the addresses of the officials and experts and educational institutions (Table 5). In addition, it was found that the majority of men reported that infected individuals develop mild to moderate respiratory symptoms, from which they will recover quickly without special treatment. Women, on the other hand, were mostly afraid of the health of family members and fear of the major economic consequences of the disaster (Table 5).

As regards the association between education and various information variables, it was found that respondents with high school graduation are mostly informed by television, radio, websites of local health institutions, addresses of officials, friends, local communities, chosen physicians, members of first-time respondents services (Table 5). Respondents with a university degree were found to be mostly informed through non-governmental organizations, educational institutions. Then, respondents with a masters/doctoral degree are mostly informed through the newspaper, scientific journals, family members (Table 5).

In the context of respondents age, those aged 18 to 29 are more informed through television to the greater extent, have the highest level of trust in information obtained through addressing of the officials. Additionally, respondents aged 29 to 38 are mostly be informed by friends. On the contrary, respondents aged 39 to 48 are mostly informed through the internet, scientific journals, websites of local health institutions, members of first responders services, educational institutions. In addition, respondents aged 58 years and older are most frequently informed via the radio and state that they are in the higher risk of epidemics due to their place of residence (Table 5).

In the following, examining of the different dimensions of risk perception we obtained the following attitude ratings: (a) The likelihood that I will be infected with the virus is low ($X = 3.00$); (b) The majority

of people who become infected will develop mild to moderate respiratory symptoms, from which they will recover without the need for special treatment ($X = 3.43$); (c) Elderly people and those with chronic illnesses (e.g., respiratory, cardiovascular, diabetes, immunity, etc.) are at the highest risk of developing severely treatable diseases and are at high risk of death ($X = 4.52$); (d) I believe that even if I do get infected I will not develop serious health problems ($X = 3.66$); (e) Although they are not at risk of developing severe illnesses, I find it good that children do not go to kindergartens and schools ($X = 4.71$); (f) I think that I am in a higher risk of being infected with the virus because of where I live ($X = 2.90$); (g) I believe that because of the epidemic and the state of emergency declared, I am at risk of losing my job and source of income ($X = 2.72$); (h) I believe that through my behavior (taking preventive measures) I can prevent the spread of virus ($X = 4.51$); (i) I feel that I have a responsibility to do what I can to protect people at risk ($X = 4.58$); (j) we will not be able to stop the spread of the virus by following the introduced measures ($X = 2.30$); (k) I think I have all the information I need to critically review the situation in our country caused by epidemic and decide what to do ($X = 3.60$); (l) I fear for the health of family members ($X = 4.11$); (m) I fear that the economic consequences of the epidemic will be great for society ($X = 4.28$); (n) I'm afraid the restriction on movement will prevent me from meeting my needs (take medication, taking money, buy groceries) ($X = 2.62$).

In relation to the association between education and various risk assessment factors, respondents with a high school diploma rate the highest statement that protective actions will avoid the spread of the virus, statement of obligations for taking measures to protect people at-risk, and the statement that they are afraid of limitations. Respondents with a university degree were found to have mostly assessed the level of risk of being unemployed, and stated that they needed information for critical evaluation of the situation (Table 6).

Table 6. One-way ANOVA results of psychological behaviours of citizens and the variables of gender, education level, and age on the risk perception of coronavirus disease.

Variable	Mean	Std. Dev.	Gender		Education Level		Age	
			F	p	F	p	F	p
51. The likelihood of infect.	3.00	1.12	0.024	0.877	2.52	0.055	6.32	0.000 **
52. Respiratory problems	3.43	1.09	13.01	0.000 **	5.59	0.068	5.23	0.001 **
53. Most severe symptoms	4.52	0.73	3.08	0.079	1.63	0.164	2.44	0.062
54. Serious health	3.66	1.03	4.29	0.029	5.06	0.030 **	1.86	0.134
55. Kindergarten or school	4.71	0.73	0.004	0.947	2.31	0.056	2.13	0.057
56. A place of greater risk	2.90	1.49	0.518	0.475	2.84	0.051	37.2	0.000 **
57. Losing my job	2.72	1.48	2.10	0.147	2.78	0.026 *	1.86	0.067
58. Prevent behavior	4.51	0.77	0.121	0.728	4.24	0.002 *	9.41	0.000 **
59. The responsibility	4.58	0.75	1.05	0.305	4.34	0.002 *	7.33	0.000 **
60. Respecting measures	2.30	1.33	0.484	0.487	9.02	0.000 **	1.43	0.231
61. Information critically	3.60	1.03	0.925	0.336	2.71	0.029 *	1.53	0.205
62. I'm afraid of health	4.11	1.02	20.24	0.000 **	2.21	0.065	1.51	0.208
63. Econ. consequences	4.28	0.94	24.05	0.000 **	1.80	0.127	1.90	0.064
64. Fear of restrictions	2.62	1.31	0.147	0.701	3.17	0.013 *	2.28	0.078

* $p \leq 0.05$; ** $p \leq 0.01$.

In the context of respondents' age, those aged 18 to 29 stated that their behaviour, which was taking preventive measures, could stop spreading of the COVID-19, and that even if they were infected, they wouldn't develop serious health problems. Respondents aged 18 to 29 showed the highest scores for assessment of first respondents services preparedness, stated that the majority of infected persons would develop mild to moderate respiratory symptoms and had a responsibility to do what they could to protect others (Table 6).

3.4. Preventive Measures for Coronavirus Disease

Despite the high importance of preventive measures to prevent the further spread of the epidemic, different claims on the Likert scale were made to the respondents, and the following results were obtained. Wash hands with soap and water for 20 s ($X = 4.78$), use disinfectants to maintain the hygiene of the room ($X = 4.47$), wear protective mask ($X = 3.25$), wear protective gloves ($X = 3.16$), do not touch the face (eyes, nose, mouth) ($X = 3.95$), do not shake hands with acquaintances ($X = 4.65$), do not

hug with family members, friends, acquaintances ($X = 4.29$), do not kiss on the cheek with family members, friends, acquaintances ($X = 4.31$), keep a recommended distance of 2 m from other people ($X = 4.15$), respect restrictions of movement in public places ($X = 4.88$); avoid contacts with people over 65 ($X = 4.63$), do not see family members with whom they do not live in the same household, friends, acquaintances ($X = 4.23$), using a disinfectant to clean my shoes and clothes in which I went to make my purchases, to the workplace ($X = 3.66$), disinfect the pet's paws upon returning from the walk ($X = 3.30$), move pets out of the living space and no longer have contact with them ($X = 2.71$), to make a plan with the members of my household about the modes of isolation if necessary ($X = 2.85$), Preparing a diet plan and necessary food with household members ($X = 3.36$), having supplies of groceries needed for 3 days of isolation ($X = 3.36$), having supplies of groceries needed for 3–7 days of isolation ($X = 4.27$), having supplies of groceries for a month and longer ($X = 3.63$). Respondents were also asked whether they had been engaged in any form of assistance prior to the epidemic of the coronavirus, and it was found that 68.6% of respondents were not engaged before the epidemic, while 29.2% of respondents were involved during the epidemic before or at the time of research.

Examining the relationship between gender and different preventive measures variables, it was found that women use soaps to a greater extent, disinfect clothing and footwear, wear protective mask, do not touch their face, do not shake hand with acquaintances, avoid contact with the elderly, do not see family members, disinfect pet's paws. On the other hand, males only use disinfectants more (Table 7).

Table 7. One-way ANOVA results of different groups of independent variables and variables on the preventive measures for coronavirus diseases.

Variable	Mean	SD	Gender		Educ. Level		Age	
			F	p	F	p	F	p
64. I wash my hands with soap	4.78	0.54	40.14	0.000 **	0.31	0.868	1.00	0.392
65. I'm disinfecting my hands	4.47	0.87	39.95	0.000 **	2.41	0.057	0.416	0.742
66. I wear a protective mask	3.25	1.6	13.92	0.000 **	1.97	0.097	1.00	0.389
67. I wear protective gloves	3.16	1.67	18.16	0.000 **	1.72	0.142	2.25	0.081
68. I don't touch my face	3.95	1.17	26.58	0.000 **	2.16	0.071	1.29	0.275
69. I don't shake hands with acquaintances	4.65	0.85	14.78	0.000 **	4.44	0.001 *	7.13	0.000 **
70. I'm not hugging others	4.29	1.17	1.97	0.160	6.07	0.000 **	4.40	0.004 *
71. I do not kiss others	4.31	1.22	2.86	0.091	7.83	0.000 **	8.06	0.000 **
72. Maintaining recommended distance	4.15	1.12	0.039	0.926	7.92	0.000 **	18.57	0.000 **
73. I respect movement restrictions	4.88	0.44	0.107	0.743	2.08	0.081	4.31	0.005 *
74. I avoid contacts with the elderly	4.63	0.84	12.33	0.000 **	2.06	0.084	15.46	0.000 **
75. I don't meet with family members	4.23	1.21	37.97	0.000 **	1.44	0.227	2.27	0.078
76. I use disinfectants for clothes and shoes	3.66	1.41	10.48	0.001 **	2.21	0.066	4.97	0.002 *
77. Disinfection of pet's paws	3.30	1.78	28.79	0.000 **	4.08	0.003 *	5.29	0.001 **
78. I have no contacts with pets	2.71	1.79	2.37	0.123	5.07	0.000 **	17.63	0.000 **
79. Plan isolation household members	2.85	1.53	0.013	0.909	4.70	0.001 **	5.73	0.001 **
80. Household nutrition plan	3.36	1.46	2.70	0.057	1.80	0.126	15.64	0.000 **
81. I have groceries	4.27	1.20	1.97	0.161	8.88	0.000 **	3.88	0.000 **
82. I have enough supplies	3.63	1.48	0.012	0.915	11.00	0.000 **	3.90	0.000 **

* $p \leq 0.05$; ** $p \leq 0.01$.

In relation to the association between educational level and various variables of risk perception, it was found that respondents with high school respondents were most likely commonly made isolation plans for their households. Furthermore, respondents with junior college degrees avoid hugging, and kissing with family members, friends and acquaintances and use disinfectants for clothes and shoes to the highest extent. Respondents with a university degree avoid contacts with pets to the highest degree. Finally, respondents with completed masters/doctoral studies to the highest degree avoid shaking hands, maintaining recommended distance, having food supplies for months or more (Table 7).

When age of respondents was analyzed, it is found that respondents aged 29 to 38 years to the highest extent respect movement restrictions, have food supplies for a month or more, and avoid contact with the elderly. Respondents aged 39 to 48, on the other hand, most commonly avoid hugging, and kissing with family members, friends and acquaintances, then carry out disinfection, and avoid contacts in general. Additionally, respondents aged 49 to 58 to the highest degree, avoid shaking hands, they maintain recommended distance, disinfect their pets' paws and make dietary plans (Table 7).

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Research Paper

Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey

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Abstract

Unprecedented measures have been adopted to control the rapid spread of the ongoing COVID-19 epidemic in China. People's adherence to control measures is affected by their knowledge, attitudes, and practices (KAP) towards COVID-19. In this study, we investigated Chinese residents' KAP towards COVID-19 during the rapid rise period of the outbreak. An online sample of Chinese residents was successfully recruited via the authors' networks with residents and popular media in Hubei, China. A self-developed online KAP questionnaire was completed by the participants. The knowledge questionnaire consisted of 12 questions regarding the clinical characteristics and prevention of COVID-19. Assessments on residents' attitudes and practices towards COVID-19 included questions on confidence in winning the battle against COVID-19 and wearing masks when going out in recent days. Among the survey completers (n=6910), 65.7% were women, 63.5% held a bachelor degree or above, and 56.2% engaged in mental labor. The overall correct rate of the knowledge questionnaire was 90%. The majority of the respondents (97.1%) had confidence that China can win the battle against COVID-19. Nearly all of the participants (98.0%) wore masks when going out in recent days. In multiple logistic regression analyses, the COVID-19 knowledge score (OR: 0.75-0.90, P<0.001) was significantly associated with a lower likelihood of negative attitudes and preventive practices towards COVID-2019. Most Chinese residents of a relatively high socioeconomic status, in particular women, are knowledgeable about COVID-19, hold optimistic attitudes, and have appropriate practices towards COVID-19. Health education programs aimed at improving COVID-19 knowledge are helpful for Chinese residents to hold optimistic attitudes and maintain appropriate practices. Due to the limited sample representativeness, we must be cautious when generalizing these findings to populations of a low socioeconomic status.

Key words: Knowledge, Attitude, Practice, COVID-19, China

Introduction

Coronavirus disease 2019 (abbreviated "COVID-19") is an emerging respiratory disease that is caused by a novel coronavirus and was first detected in December 2019 in Wuhan, China. The disease is highly infectious, and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and

dyspnea. In China, 18.5% of the patients with COVID-19 develop to the severe stage, which is characterized by acute respiratory distress syndrome, septic shock, difficult-to-tackle metabolic acidosis, and bleeding and coagulation dysfunction [1,2]. Empirical clinical data have shown that the overall

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case fatality rate of COVID-19 is 2.3% in China, much lower than those of SARS (9.5%), MERS (34.4%), and H7N9 (39.0%) [1-3]. The ongoing COVID-19 epidemic has spread very quickly, and by February 15, 2020, the virus had reached 26 countries altogether, resulting in 51,857 laboratory-confirmed infections and 1669 deaths, with nearly all infections and deaths occurring in China [4]. In response to this serious situation, the World Health Organization (WHO) declared it a public health emergency of international concern on January 30 and called for collaborative efforts of all countries to prevent the rapid spread of COVID-19 [5].

Hubei Province, in particular its capital city Wuhan, has been seriously hit by the COVID-19 epidemic. Some unprecedented measures have been adopted to control the COVID-19 transmission in Hubei and other provinces of China, including the suspension of public transportation, the closing of public spaces, close management of communities, and isolation and care for infected people and suspected cases. Until January 27, government authorities had locked down the whole province of Hubei, and Chinese residents, both inside and outside of Hubei, were also required to just stay at home to avoid contacting with others.

The battle against COVID-19 is still continuing in China. To guarantee the final success, people's adherence to these control measures are essential, which is largely affected by their knowledge, attitudes, and practices (KAP) towards COVID-19 in accordance with KAP theory [6,7]. Lessons learned from the SARS outbreak in 2003 suggest that knowledge and attitudes towards infectious diseases are associated with level of panic emotion among the population, which can further complicate attempts to prevent the spread of the disease [8,9].

To facilitate outbreak management of COVID-19 in China, there is an urgent need to understand the public's awareness of COVID-19 at this critical moment. In this study, we investigated the KAP towards COVID-19 of Chinese residents during the rapid rise period of the COVID-19 outbreak.

Methods

Participants

This cross-sectional survey was conducted from January 27 to February 1, the week immediately after the lockdown of Hubei Province. Because it was not feasible to do a community-based national sampling survey during this special period, we decided to collect the data online. Relying on the authors' networks with local people living in Hubei, a one-page recruitment poster was posted/reposted to

moments and groups of their Wechat (similar to "WhatsApp") and Weibo (similar to "Twitter") accounts. The poster was also posted on the official Wechat accounts of several local media outlets, including *Yangtze River Daily*, *Listen Online*, and *Chutian Metropolis*.

The poster contained a brief introduction background, objective, procedures, voluntary nature of participation, declarations of anonymity and confidentiality, and notes for filling in the questionnaire, as well as the link and quick response (QR) code of the online questionnaire. Persons who were of Chinese nationality, were aged 16 years or more, understood the content of the poster, and agreed to participate in the study were instructed to complete the questionnaire via clicking the link or scanning the QR code. Although the questionnaire was distributed by local residents, we did not constrict our sample to Hubei residents only. Residents of other provinces were also eligible for this survey if they were willing to participate.

The Ethics Committee of Wuhan Mental Health Center approved our study protocol and procedures of informed consent before the formal survey. Participants had to answer a yes-no question to confirm their willingness to participate voluntarily. After confirmation of the question, the participant was directed to complete the self-report questionnaire.

Measures

The questionnaire consisted of two parts: demographics and KAP. Demographic variables included age, gender, marital status, education, occupation, and place of current residence (Hubei vs. other provinces of China).

According to guidelines for clinical and community management of COVID-19 by the National Health Commission of the People's Republic of China [10,11], a COVID-19 knowledge questionnaire was developed by the authors. The questionnaire had 12 questions (Table 1): 4 regarding clinical presentations (K1-K4), 3 regarding transmission routes (K5-K7), and 5 regarding prevention and control (K8-K12) of COVID-19. These questions were answered on a true/false basis with an additional "I don't know" option. A correct answer was assigned 1 point and an incorrect/unknown answer was assigned 0 points. The total knowledge score ranged from 0 to 12, with a higher score denoting a better knowledge of COVID-19. The Cronbach's alpha coefficient of the knowledge questionnaire was 0.71 in our sample, indicating acceptable internal consistency [12].

Table 1. Questionnaire of knowledge, attitudes, and practice towards COVID-19

Questions	Options
Knowledge (correct rate, % of the total sample)	
K1. The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia. (96.4)	True, false, I don't know
K2. Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus. (70.2)	True, false, I don't know
K3. There currently is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection. (94.0)	True, false, I don't know
K4. Not all persons with COVID-2019 will develop to severe cases. Only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases. (73.2)	True, false, I don't know
K5. Eating or contacting wild animals would result in the infection by the COVID-19 virus. (91.4)	True, false, I don't know
K6. Persons with COVID-2019 cannot infect the virus to others when a fever is not present. (89.3)	True, false, I don't know
K7. The COVID-19 virus spreads via respiratory droplets of infected individuals. (97.8)	True, false, I don't know
K8. Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus. (73.9)	True, false, I don't know
K9. It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus. (96.6)	True, false, I don't know
K10. To prevent the infection by COVID-19, individuals should avoid going to crowded places such as train stations and avoid taking public transportation. (88.6)	True, false, I don't know
K11. Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus. (98.2)	True, false, I don't know
K12. People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days. (87.3)	True, false, I don't know
Attitudes	
A1. Do you agree that COVID-19 will finally be successfully controlled?	Agree, disagree, I don't know
A2. Do you have confidence that China can win the battle against the COVID-19 virus?	Yes, no
Practices	
P1. In recent days, have you gone to any crowded place?	Yes, no
P2. In recent days, have you worn a mask when leaving home?	Yes, no

Attitudes towards COVID-19 were measured by 2 questions (A1-A2, Table 1) about the agreement on the final control of COVID-19 and the confidence in winning the battle against COVID-19. The assessment of respondents' practices was composed of 2 behaviors (P1-P2, Table 1): going to a crowded place and wearing a mask when going out in recent days.

Statistical analysis

Frequencies of correct knowledge answers and various attitudes and practices were described. Knowledge scores and attitudes and practices of different persons according to demographic characteristics were compared with independent-samples *t* test, one-way analysis of variance (ANOVA), or Chi-square test as appropriate. Multivariable linear regression analysis using all of the demographic variables as independent variables and knowledge score as the outcome variable was conducted to identify factors associated with knowledge. Similarly, binary logistic regression analyses were used to identify factors associated with attitudes and practices. Factors were selected with a backward stepwise method. Unstandardized regression coefficients (β) and odds ratios (ORs) and their 95% confidence intervals (CIs) were used to quantify the associations between variables and KAP. Data analyses were conducted with SPSS version 17.0. The statistical significance level was set at $p < 0.05$ (two-sided).

Results

A total of 6919 participants completed the survey questionnaire. After excluding 9 respondents who reported having been infected with the COVID-19 virus, the final sample consisted of 6910 participants. Among this final sample, the average age was 33.0 years (standard deviation [SD]: 10.7, range: 16-87), 4542 (65.7%) were women, 4387 (63.5%) held a bachelor's degree or above, 3881 (56.2%) engaged in mental labor, and 3810 (55.1%) were Hubei residents. Other demographic characteristics are shown in Table 2.

The correct answer rates of the 12 questions on the COVID-19 knowledge questionnaire were 70.2-98.6% (Table 1). The mean COVID-19 knowledge score was 10.8 (SD: 1.6, range: 0-12), suggesting an overall 90% ($10.8/12 \times 100$) correct rate on this knowledge test. Knowledge scores significantly differed across genders, age-groups, categories of marital status, education levels, and residence places ($P < 0.001$) (Table 2). Multiple linear regression analysis showed that male gender (vs. female, β : -0.284, $P < 0.001$), age-group of 16-29 years (vs. 30-49 years, β : -0.302, $P < 0.001$), marital status of never-married (vs. married, β : -0.215, $P < 0.001$), education of bachelor's degree or lower (vs. master degree and above, β : -0.191 ~ -1.346, $P < 0.001$), and occupations of unemployment (β : -0.158, $P = 0.040$) and students (β : -0.234, $P < 0.001$) (vs. mental labor) were significantly associated with lower knowledge score (Table 3).

Table 2. Demographic characteristics of participants and knowledge score of COVID-19 by demographic variables

Characteristics		Number of participants (%)	Knowledge score (mean $\pm$ standard deviation)	t/F	P
Gender	Male	2368 (34.3)	10.5 $\pm$ 2.0	9.301	<0.001
	Female	4542 (65.7)	10.9 $\pm$ 1.3		
Age-group (years)	16-29	2821 (40.8)	10.4 $\pm$ 1.9	160.683	<0.001
	30-49	3574 (51.7)	11.1 $\pm$ 1.2		
	50+	515 (7.5)	10.9 $\pm$ 1.3		
	Others*	3836 (55.5)	11.0 $\pm$ 1.2		
Marital status	Married	2744 (39.7)	10.4 $\pm$ 1.9	146.72	<0.001
	Never-married	330 (33.0)	11.0 $\pm$ 1.2		
	Others*	1217 (17.6)	9.7 $\pm$ 2.4		
	Others*	1306 (18.9)	10.8 $\pm$ 1.5		
Education	Middle school and below	3043 (44.0)	11.0 $\pm$ 1.2	262.0	4/8
	Associate's degree	1344 (19.5)	11.2 $\pm$ 1.0		
	Bachelor's degree	1191 (17.2)	10.7 $\pm$ 1.6		
	Master's degree and above	451 (6.5)	10.6 $\pm$ 1.8		
Occupation	Physical labor	1387 (20.1)	10.1 $\pm$ 2.1	138.943	<0.001
	Unemployed	3881 (56.2)	11.1 $\pm$ 1.2		
	Students	3810 (55.1)	10.7 $\pm$ 1.8		
	Mental labor	3100 (44.9)	10.9 $\pm$ 1.3		
Place of current residence	Hubei			4.774	<0.001
	Other parts of China				

Others included no-married, co-habiting, separated, divorced, and widowed.

Table 3. Results of multiple linear regression on factors associated with poor COVID-19 knowledge

Variable	Coefficient	Standard error	t	P
Gender (male vs. female)	-0.284	0.037	7.591	<0.001
Age-group (16-29 vs. 30-49 years)	-0.302	0.057	5.337	<0.001
Marital status (never-married vs. married)	-0.215	0.057	3.771	<0.001
Education (middle school and below vs. master's degree and above)	-1.346	0.060	22.030	<0.001
Education (associate's degree vs. master's degree and above)	-0.410	0.057	7.145	<0.001
Education (bachelor's degree vs. master's degree and above)	-0.191	0.048	3.956	<0.001
Occupation (unemployment vs. mental labor)	-0.158	0.077	2.055	0.040
Occupation (students vs. mental labor)	-0.234	0.058	4.027	<0.001

The majority of the respondents agreed that COVID-19 will finally be successfully controlled (90.8%). Rates of reporting "disagree" and "I don't know" were 1.9% and 7.3%, respectively. The attitude towards the final success in controlling COVID-19 significantly differed across genders, education levels, occupation categories, and residence places ($P < 0.05$). In additions, respondents reporting "disagree" and "I don't know" had significantly lower knowledge scores than those reporting "agree" ($P < 0.001$) (Table 4). Multiple logistic regression analysis found that marital status of "others" (vs. married, OR: 2.00, $P < 0.001$) and COVID-19 knowledge score (OR: 0.82, $P < 0.001$) were significantly associated with disagreement on the final success in controlling the disease. Female gender (vs. male, OR: 1.50, $P < 0.001$), age-groups of 16-29 years (OR: 1.76, $P = 0.013$) and 30-49 years (OR: 1.54, $P = 0.048$) (vs. 50+ years), education levels of associate's degree or higher (vs. middle school and below, OR: 1.61-2.23, $P \leq 0.008$), occupations of unemployment (OR: 1.86, $P = 0.001$) and students (OR: 0.73, $P = 0.043$) (vs. mental labor), residence place of Hubei (vs. other parts of China, OR: 1.40, $P = 0.001$), and COVID-19 knowledge score (OR: 0.81, $P < 0.001$) were significantly associated with the

answer of "I don't know" on A1 (Table 5).

Nearly all of the respondents (97.1%) had confidence that China can win the battle against COVID-19, while 2.9% had no such confidence. The attitude towards confidence of winning significantly differed across categories of marital status and education levels ($P < 0.05$). The COVID-19 knowledge scores were significantly lower in persons without than with confidence of winning ($P < 0.001$) (Table 4). Multiple logistic regression analysis showed that education levels of associate's degree or higher (vs. middle school and below, OR: 3.13-5.04, $P < 0.001$) and COVID-19 knowledge score (OR: 0.75, $P < 0.001$) were significantly associated with no confidence of winning.

The vast majority of the participants had not visited any crowded place (96.4%) and wore masks when going out (98.0%) in recent days. There was still a small portion of the participants who had visited crowded places (3.6%) and had not worn masks when leaving home (2.0%) recently. The rates of these two practices significantly differed across demographic groups ($P < 0.05$), except for the rates of going to a crowded place by residence place (Table 6). Multiple logistic regression analysis showed that male gender

(vs. female, OR: 1.37, $P=0.019$), occupation of “students” (vs. mental labor, OR: 1.54, $P=0.007$), and COVID-19 knowledge score (OR: 0.90, $P<0.001$) were significantly associated with going to any crowded place. Male gender (vs. female, OR: 1.37, $P=0.019$), marital status of “others” (vs. married, OR: 2.97, $P=0.003$), residing in other parts of China (vs. Hubei, OR: 2.70, $P<0.001$), and COVID-19 knowledge score (OR: 0.78, $P<0.001$) were significantly associated with not wearing a mask outside (Table 7).

Discussion

To the best of our knowledge, this is the first study in China examining the KAP towards COVID-19 among Chinese residents. In this predominantly female and well-educated population, we found an overall correct rate of 90% on the knowledge questionnaire, indicating that most respondents are knowledgeable about COVID-19.

Table 4. Attitudes towards COVID-19 by demographic variables

Characteristics		Attitudes, n (%) or mean (standard deviation)				
		A1: final success in controlling			A2: confidence of winning	
		Agree	Disagree	Don't know	Yes	No
Gender	Male	2185 (92.3)	44 (1.9)	139 (5.9)	2285 (96.9)	73 (3.1)
	Female	4086 (90.0)	89 (2.0)	367 (8.1)**	4418 (97.3)	124 (2.7)
Age-group (years)	16-29	2540 (90.0)	65 (2.3)	216 (7.7)	2736 (97.0)	85 (3.0)
	30-49	3249 (90.9)	63 (1.8)	262 (7.3)	3471 (97.1)	103 (2.9)
	50+	482 (93.6)	5 (1.0)	28 (5.4)	506 (98.3)	9 (1.7)
Marital status	Married	3507 (91.4)	39 (1.5)	270 (7.0)	3744 (97.6)	92 (2.4)
	Never-married	2471 (90.1)	64 (2.3)	209 (7.6)	2650 (96.6)	94 (3.4)
	Others*	293 (88.8)	10 (3.0)	27 (8.2)	319 (96.7)	11 (3.3)*
Education	Middle school and below	1110 (91.2)	38 (3.1)	69 (5.7)	1200 (98.6)	17 (1.4)
	Associate's degree	1185 (90.7)	27 (2.1)	94 (7.2)	1274 (97.5)	32 (2.5)
	Bachelor's degree	2753 (90.5)	50 (1.6)	240 (7.9)	2938 (96.5)	105 (3.5)
Occupation	Master's degree and above	1223 (91.0)	18 (1.3)	103 (7.7)**	1301 (96.8)	43 (3.2)**
	Physical labor	1078 (90.5)	27 (2.3)	86 (7.2)	1154 (96.9)	37 (3.1)
	Unemployed	388 (86.0)	14 (3.1)	49 (10.9)	433 (96.0)	18 (4.0)
Place of current residence	Students	1271 (91.6)	31 (2.2)	85 (6.1)	1361 (98.1)	26 (1.9)
	Mental labor	3534 (91.1)	61 (1.6)	286 (7.4) **	3765 (97.0)	116 (3.0)
	Hubei	3430 (90.0)	73 (1.9)	307 (8.1)	3685 (97.0)	115 (3.0)
COVID-19 knowledge score	Other parts of China	2841 (91.6)	60 (1.9)	199 (6.4)*	3018 (97.4)	82 (2.6)
		10.8 (1.5)	10.0 (2.4)	10.3 (2.1)***	10.8 (1.5)	10.0 (2.5)***

Others included re-married, co-habiting, separated, divorced, and widowed.
 * $P<0.05$, ** $P<0.01$, *** $P<0.001$.

Table 5. Results of multiple binary logistic regression analysis on factors significantly associated with attitudes towards COVID-19

Variable	OR (95%CI)	P
A1: disagree with final success (vs. agree)		
Marital status (others* vs. married)	2.00 (1.01, 3.96)	0.046
COVID-19 knowledge score	0.82 (0.77, 0.88)	<0.001
A1: unknown about final success (vs. agree)		
Gender (female vs. male)	1.50 (1.21, 1.85)	<0.001
Age-group (16-29 vs. 50+ years)	1.76 (1.13, 2.75)	0.013
Age-group (30-49 vs. 50+ years)	1.54 (1.01, 2.37)	0.048
Education (master's degree and above vs. middle school and below)	2.23 (1.54, 3.23)	<0.001
Education (bachelor's degree vs. middle school and below)	2.00 (1.45, 2.78)	<0.001
Education (associate's degree vs. middle school and below)	1.61 (1.13, 2.28)	0.008
Occupation (unemployment vs. mental labor)	1.86 (1.30, 2.65)	0.001
Occupation (students vs. mental labor)	0.73 (0.53, 0.99)	0.043
Residence place (Hubei vs. other parts of China)	1.40 (1.15, 1.70)	0.001
COVID-19 knowledge score	0.81 (0.77, 0.85)	<0.001
A2: no confidence of winning		
Education (master's degree and above vs. middle school and below)	4.98 (2.64, 9.40)	<0.001
Education (bachelor's degree vs. middle school and below)	5.04 (2.82, 9.03)	<0.001
Education (associate's degree vs. middle school and below)	3.13 (1.66, 5.90)	<0.001
COVID-19 knowledge score	0.75 (0.70, 0.80)	<0.001

Others included re-married, co-habiting, separated, divorced, and widowed.

Table 6. Practices towards COVID-19 by demographic variables

Characteristics		Practices, n (%) or mean (standard deviation)			
		P1: going to a crowded place		P2: wearing a mask	
		Yes	No	Yes	No
Gender	Male	109 (4.6)	2259 (95.4)	2296 (97.0)	72 (3.0)
	Female	143 (3.1)	4399 (96.9)**	4476 (98.5)	66 (1.5)***
Age-groups (years)	16-29	123 (4.4)	2698 (95.6)	2723 (96.5)	98 (3.5)
	30-49	110 (3.1)	3464 (96.9)	3541 (99.1)	33 (0.9)
	50+	19 (3.7)	496 (96.3)*	508 (98.6)	7 (1.4)***
Marital status	Married	119 (3.1)	3717 (96.9)	3798 (99.0)	38 (1.0)
	Never-married	119 (4.3)	2625 (95.7)	2654 (96.7)	90 (3.3)
	Others#	14 (4.2)	316 (95.8)*	320 (97.0)	10 (3.0)***
Education	Middle school and below	67 (5.5)	1150 (94.5)	1177 (96.7)	40 (3.3)
	Associate degree	44 (7.4)	1262 (96.6)	1284 (98.3)	22 (1.7)
	Bachelor degree	106 (3.5)	2937 (96.5)	2993 (98.4)	50 (1.6)
Occupation	Master degree and above	35 (2.6)	1309 (97.4)**	1318 (98.1)	26 (1.9)**
	Physical labor	51 (4.3)	1140 (95.7)	1171 (98.3)	20 (1.7)
	Unemployed	15 (5.3)	436 (96.7)	442 (98.0)	9 (2.0)
Place of current residence	Students	71 (5.1)	1316 (94.9)	1334 (96.2)	53 (3.8)
	Mental labor	115 (3.0)	3766 (97.0)**	3825 (98.6)	56 (1.4)***
	Hubei	127 (3.3)	3683 (96.7)	3761 (98.7)	49 (1.3)
COVID-19 knowledge score	Other parts of China	125 (4.0)	2975 (96.0)	3011 (97.1)	89 (2.9)***
		10.3 (2.2)	10.8 (1.5)***	10.8 (1.5)	9.3 (1.2)***

Others included re-married, co-habiting, separated, divorced, and widowed.

*P<0.05, **P<0.01, ***P<0.001.

Table 7. Results of multiple binary logistic regression analysis on factors significantly associated with practices towards COVID-19

Variable	OR (95%CI)	P
P1: going to a crowded place		
Gender (male vs. female)	1.37 (1.05, 1.75)	0.019
Occupation (students vs. mental labor)	1.54 (1.12, 2.11)	0.007
COVID-19 knowledge score	0.90 (0.85, 0.96)	0.001
P2: not wearing a mask		
Gender (male vs. female)	1.89 (1.32, 2.63)	0.001
Marital status (others* vs. married)	2.97 (1.46, 6.08)	0.003
Residence place (other parts of China vs. Hubei)	2.70 (1.85, 4.00)	<0.001
COVID-19 knowledge score	0.78 (0.73, 0.83)	<0.001

**Others* included re-married, co-habiting, separated, divorced, and widowed.

The vast majority of the participants also held an optimistic attitude towards the COVID-19 epidemic: 90.8% believed that COVID-19 will finally be successfully controlled, and 97.1% had confidence that China can win the battle against the virus. Despite this, the practices of Chinese residents were very cautious: nearly all avoided crowded places (96.4%) and wore masks when leaving the home (98.0%) during the rapid rise period of the COVID-19 outbreak. We also analyzed the characteristics of KAP towards COVID-19 and identified some demographic factors associated with KAP; these findings are useful for public health policy-makers and health workers to recognize target populations for COVID-19 prevention and health education.

The finding of a high correct rate of COVID-19 knowledge in Chinese residents was unexpected, because this epidemiological survey was conducted during the very early stage of the epidemic. We consider that this is primarily due to the sample

characteristics: 82.4% of the study sample held an associate's degree or higher. Because of the serious situation of the epidemic and the overwhelming news reports on this public health emergency, this population would actively learn knowledge of this infectious disease from various channels of information such as CCTV, the official website of the National Health Commission of China and the Wechat official account of the Wuhan Health Commission. The significant positive association between levels of education and COVID-19 knowledge scores supports this speculation.

During the SARS epidemic, 70.1-88.9% of the Chinese residents believed that SARS can be successfully controlled or prevented, and 94.7-100% had confidence that China can win the battle against SARS [13-15]. These figures are similar to our findings on the rates of final success and confidence of winning in the battle against COVID-19. The optimistic attitude of the Chinese residents could be related to the unprecedented COVID-19 control measures such as traffic limits all throughout China and the shutdown of cities and counties of Hubei Province, which enhance people's confidence in winning the battle against the virus. Second, the concerted efforts from across the country also increase Chinese people's confidence to overcome the epidemic, for example, to aid the COVID-19 virus control efforts, many provinces had dispatched thousands of medical workers and provided a large number of medical materials to Wuhan after the outbreak. Third, the good knowledge about COVID-19 among the Chinese residents can also explain this phenomenon, because

as shown by results of multiple analyses, higher COVID scores were significantly associated with less likelihood of “disagree” and “I don’t know” answers to question A1 and “no” answer to question A2.

Although attitudes towards COVID-19 were optimistic, most residents took precautions to prevent infection by COVID-19: not going to crowded places and wearing masks when going outside. These strict preventive practices could be primarily attributed to the very strict prevention and control measures implemented by local governments such as banning public gatherings. Second, they also could be the result of the residents’ good knowledge regarding the high infectivity of the COVID-19 virus, which can be easily transmitted between people via invisible respiratory droplets. Unfortunately, the present study still showed that 3.6% residents went to crowded places and 2.0% did not wear masks when leaving homes recently. These potentially risky behaviors were related to male gender, occupation of “students”, marital status of “others”, residing in other parts of China, and poor COVID-19 knowledge. As suggested by findings from previous studies regarding age and gender patterns of risk-taking behaviors [16–18], men and late adolescents are more likely to engage in risk-taking behaviors. In line with these previous findings, we found significant association between male gender and potentially dangerous practices towards COVID-19 in this study. The significantly higher risk of going to a crowded place among students could be ascribed to their young age. The significantly higher risk of not wearing a mask when leaving homes in non-Hubei vs. Hubei residents may be attributed to the less serious situation of the COVID-19 epidemic in non-Hubei parts of China, resulting non-Hubei residents believing that they have a lower risk of infection with the COVID-19 virus.

It is worth mentioning that higher COVID-19 knowledge scores were found to be significantly associated with a lower likelihood of negative attitudes and potentially dangerous practices towards COVID-19 epidemic in this study. These findings clearly indicate the importance of improving residents’ COVID-19 knowledge via health education, which may also result in improvements in their attitudes and practices towards COVID-19. Our findings of the demographic factors associated with KAP towards COVID-19 are generally consistent with previous studies on SARS in 2003 [19, 20]. These findings further suggest that the health education intervention would be more effective if it targets certain demographic groups, for example, the COVID-19 knowledge may be greatly increased if the health education programs are specifically designed

for men and persons with a low level of education.

The strength of this study lies in its large sample recruited during a critical period, the early stage of the COVID-19 outbreak. Nevertheless, compared to the most recent national population statistics of China [21], our sample was obviously over-representative of women, well-educated people, and people engaging in mental labor. Given the significant associations between these demographic variables and KAP towards COVID-19 revealed in this study, we may have overestimated knowledge and rates of preventive practices and underestimated rates of positive attitudes towards COVID-19 of Chinese residents. Considering that educational attainment and occupation are often used as proxy measures of socioeconomic status [22], strictly speaking, our findings can only be generalized to Chinese populations of a relatively high socioeconomic status, particularly women.

Due to limited access to internet and online health information resources, vulnerable populations of Chinese society under the COVID-19 epidemic such as older adults and rural people at grass-root level are more likely to have poor knowledge, negative attitudes, and inappropriate preventive practices towards COVID-19. Therefore, KAP towards COVID-19 of vulnerable populations deserves special research attention in today’s China. In addition to the limited sample representativeness, the second limitation of this study is the unstandardized and inadequate assessment of attitudes and practices towards COVID, which should be developed via focus group discussion and in-depth interview and constructed as multi-dimensional measures. Due to the very limited time for developing the questionnaire, both were measured with two simple questions only.

In summary, our findings suggest that Chinese residents of a relatively high level of socioeconomic status, in particular women, have had good knowledge, optimistic attitudes, and appropriate practices towards COVID-19 during the rapid rise period of the COVID-19 outbreak. In addition, good COVID-19 knowledge is associated with optimistic attitudes and appropriate practices towards COVID-19, suggesting that health education programs aimed at improving COVID-19 knowledge are helpful for encouraging an optimistic attitudes and maintaining safe practices. Hopefully, under the combined efforts of Chinese authorities and all Chinese residents, China surely will win the battle against COVID-19 in the near future. Due to the limitation in representativeness of the sample, more studies are warranted to investigate the KAP towards COVID-19 among Chinese residents of a low

socioeconomic status.

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Competing Interests

The authors have declared that no competing interest exists.

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Lampiran 6.

Faktor yang Berpengaruh Terhadap Kepatuhan Masyarakat pada Protokol Kesehatan dalam Mencegah Penyebaran COVID-19.. (Riyadi & Putri Larasaty)

FAKTOR YANG BERPENGARUH TERHADAP KEPATUHAN MASYARAKAT PADA PROTOKOL KESEHATAN DALAM MENCEGAH PENYEBARAN COVID-19

(FACTORS AFFECTING COMMUNITY COMPLIANCE WITH HEALTH PROTOCOLS IN
PREVENTING THE SPREAD OF COVID-19)

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ABSTRAK

Pandemi Covid-19 merupakan salah satu kejadian yang dihadapi oleh berbagai negara di dunia dalam bidang kesehatan. Meluasnya penyebaran virus ini menjadi isu yang sangat krusial untuk segera dihentikan. Berbagai macam kebijakan telah dilakukan oleh pemerintah demi mengentikan penyebaran pandemi ini. Namun, di sisi lain masyarakat dituntut untuk mematuhi protokol kesehatan dalam upaya menghentikan penyebaran Covid -19 supaya tidak meluas. Penelitian ini bertujuan untuk menganalisis tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan dalam kehidupan sehari-harinya, serta untuk mengetahui faktor sosial demografi yang berpengaruh terhadap kepatuhan penerapan protokol kesehatan di dalam masyarakat di Indonesia. Data yang digunakan dalam penelitian ini berasal dari Survei Sosial Demografi Dampak Covid -19 tahun 2020 dari BPS. Analisis ini menggunakan analisis deskriptif dan analisis regresi. Hasil empiris menunjukkan rata-rata indeks kepatuhan responden laki-laki lebih rendah dibandingkan responden perempuan, serta terdapat kecenderungan bahwa kaum muda lebih tidak acuh terhadap penerapan protokol kesehatan dengan rata-rata skor kepatuhan yang relatif lebih rendah dibandingkan dengan kaum yang lebih tua. Selain itu, karakteristik sosial demografi yang berpengaruh terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan yaitu status reaksi responden, persepsi keefektifan isolasi mandiri, tingkat kekhawatiran tentang berita Covid -19, tingkat kekhawatiran tentang bepergian ke luar rumah, jenis kelamin, tingkat pendidikan, status pernikahan, status kesehatan, dan usia.

Kata kunci: covid-19, kepatuhan masyarakat, protokol kesehatan, sosial demografi

ABSTRACT

The Covid-19 pandemic is one of the events threatening all around the world particularly in health sector. The widespread of this virus causes the most crucial issue to stop it immediately. Various kinds of policies have been made by the government to end the spread. However, on the other hand, the community is critically required to comply with health protocols as a serious effort to stop it. This study aims to analyze the level of community compliance in implementing health protocols in their daily lives, as well as to determine the socio-demographic factors that affect compliance with health protocols in society in Indonesia. The data used in this study is derived from the 2020 Social Demographic Impact of Covid-19 Survey from BPS. This analysis uses descriptive and regression analysis. The empirical results show that the average adherence index of male respondents is lower than that of female respondents, and there is a tendency that young people are more disobeying about health protocols with a relatively lower average adherence score compared to the older people. In addition, the socio-demographic characteristics that affect the level of community compliance with health protocols are respondent reaction status, perceptions of the effectiveness of independent isolation, level of concern about Covid-19 news, level of concern about traveling outside the home, gender, education level, marital status, health status, and age.

Keywords: covid-19, community compliance, health protocols, social demographics

PENDAHULUAN

Pandemi *Corona Virus Disease 2019* (Covid-19) untuk pertama kalinya muncul di Kota Wuhan, China pada Desember 2019. Kemudian, wabah ini menyebar sangat cepat ke beberapa negara di dunia, tak terkecuali Indonesia. Wabah yang disebabkan oleh *Novel Coronavirus* (NCoV) ini pun telah ditetapkan sebagai pandemi global oleh *World Health Organization* (WHO). Di Indonesia, pandemi Covid-19 telah ditetapkan sebagai jenis penyakit yang menimbulkan Kedaruratan Kesehatan Masyarakat pada 31 Maret 2020, sesuai dalam Keputusan Presiden Nomor 11 Tahun 2020 tentang Penetapan Kedaruratan Kesehatan Masyarakat Corona Virus Disease (COVID-19). Dengan adanya penetapan tersebut, upaya penanggulangan wajib dilakukan sesuai dengan peraturan perundang-undangan dalam masa tanggap darurat penanganan Covid-19.

Untuk mengurangi dan mencegah transmisi virus ini, pemerintah telah mewajibkan masyarakatnya untuk menjaga protokol kesehatan. Satuan Tugas Penanganan Covid-19 terus berupaya dalam menyampaikan pesan kepada seluruh masyarakat untuk mengurangi risiko penularan virus Covid-19, seperti berdiam diri di rumah, menggunakan masker, sering mencuci tangan menggunakan sabun dan air mengalir, menjaga jarak fisik (*physical distancing*), dan tidak menyentuh wajah, mata, hidung, dan mulut. Namun, penerapan perilaku sosial yang baru pada masyarakat tidaklah mudah dan masih ada sebagian orang masih belum taat dalam penerapan kebiasaan baru ini. Kemenkes juga menerbitkan buku panduan yang dapat digunakan dalam rangka pengendalian Covid-19. Kemenkes (2020) menyatakan bahwa panduan ini diterbitkan dengan tujuan untuk melaksanakan pencegahan dan pengendalian Covid-19 di Indonesia. Tujuan khususnya untuk memahami strategi dan indikator penanggulangan, melaksanakan surveilans epidemiologi, melaksanakan diagnosis laboratorium, melaksanakan manajemen klinis, melaksanakan pencegahan dan pengendalian penularan, melaksanakan komunikasi risiko dan pemberdayaan masyarakat, melaksanakan penyediaan sumber daya, dan melaksanakan pelayanan kesehatan esensial.

Kebiasaan baru dalam menjaga kesehatan ini dapat dijelaskan dengan beberapa teori mengenai perilaku. *Theory of Planned Behaviour* oleh Ajzen (2005) menjelaskan bahwa perilaku individu didorong niat yang dipengaruhi oleh tiga faktor yaitu *Behavioral Beliefs*, *Normative Beliefs*, dan *Control Beliefs*. Selain itu, faktor pendukung seperti faktor personal, sosial, dan informasi menjadi faktor yang memengaruhi perilaku individu. Perilaku mencegah penyakit juga dijelaskan dalam *Protection Motivation Theory* yang menyatakan bahwa informasi kesehatan yang bersifat peringatan dapat merubah sikap perilaku individu. Teori yang dikembangkan oleh Rogers & Prentice-Dunn, (1997) ini menjelaskan bahwa dari informasi yang diperoleh, motivasi untuk melindungi diri bergantung pada penilaian terhadap ancaman (*threat appraisal*) dan strategi dalam menghadapi ancaman (*coping appraisal*).

Bashirian, dkk. (2020) telah melakukan penelitian perilaku pegawai di Rumah Sakit Iran dalam pencegahan penularan Covid-19. Hasilnya menyatakan bahwa persepsi terhadap ancaman (tingkat keparahan) dan keefektifan anjuran yang direkomendasikan memberikan pengaruh perilaku petugas/tenaga medis dalam pencegahan penularan virus ini. Selain itu, karakteristik demografis juga memberikan persepsi ancaman yang berbeda, dimana wanita memiliki penilaian ancaman yang lebih tinggi. Berdasarkan penelitian tersebut, Bashirian, dkk. (2020) menekankan pentingnya informasi untuk meningkatkan persepsi efektifitas perilaku protektif terhadap Covid-19. Penelitian yang dilakukan oleh Prasetyo, dkk. (2020) juga menunjukkan bahwa pemahaman tentang Covid-19 memiliki pengaruh langsung yang signifikan terhadap persepsi ancaman dan tingkat keparahan. Selanjutnya, ancaman dan keparahan yang dirasakan memiliki efek yang signifikan terhadap niat berperilaku meski secara tidak langsung. Kemudian, niat tersebut secara langsung berpengaruh secara signifikan pada perilaku seseorang.

Yanti, dkk. (2020) juga menyatakan penerapan perilaku kesehatan erat kaitannya dengan pengetahuan dan respons atau sikap seseorang. Penelitian yang menganalisis perilaku taat pada kebijakan *social distancing* sebagai upaya pencegahan penularan Covid-9 di Indonesia tersebut menunjukkan bahwa tingkat pendidikan dan pekerjaan memengaruhi sikap positif dalam penerapan *social distancing*. Pengetahuan yang baik dalam efektivitas *social distancing* dan sikap atau respons positif akan meningkatkan niat untuk berperilaku sesuai rekomendasi pemerintah.

Penelitian mengenai perilaku dalam pencegahan penularan Covid-19 juga telah dilakukan oleh Triyanto & Kusumawardani (2020), yang menyatakan bahwa pengetahuan yang minim mengenai

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Covid-19 memengaruhi perilaku seseorang. Pengetahuan yang baik mengenai pencegahan penularan Covid-19 akan meningkatkan tingkat kewaspadaan dan pemahaman mengenai pentingnya dalam mencegah penularan penyakit ini. Pengetahuan atau informasi yang diperoleh ini dipengaruhi oleh tingkat pendidikan masyarakat dan karakteristik wilayah (perkotaan atau perdesaan). Penelitian yang dilakukan di Prancis oleh Raude, dkk. (2020) menjelaskan bahwa terdapat perbedaan respons perilaku terhadap penularan Covid-19, dimana laki-laki dan usia muda lebih cenderung untuk tidak mematuhi anjuran pemerintah. Namun demikian, perilaku tersebut masih dapat diubah dengan menekankan norma-norma positif untuk mempromosikan perilaku kesehatan yang adaptif. Berdasarkan literatur-literatur tersebut, perbedaan karakteristik dan penilaian masyarakat menentukan perilaku dalam menjaga kesehatan atau penularan penyakit. Persepsi masyarakat yang tidak termotivasi untuk menjaga diri ini akan berdampak pada penularan Covid-19 yang semakin meluas.

Penelitian ini bertujuan untuk mengetahui tingkat kepatuhan masyarakat terhadap protokol kesehatan di masa pandemi Covid-19 dalam rangka pencegahan penyebaran Covid-19. Selain itu juga ingin melihat pengaruh faktor karakteristik sosial demografi masyarakat terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan. Penelitian ini diharapkan dapat memberikan bahan masukan bagi pemangku kebijakan dalam menerapkan aturan pengendalian penyebaran Covid-19 dan memberikan pengawasan terhadap penerapan protokol kesehatan pada masyarakat.

METODE

Data dan Sumber Data

Penelitian ini menggunakan data hasil Survei Sosial Demografi Dampak Covid-19 yang dilaksanakan oleh BPS pada Bulan April 2020 secara online (BPS, 2020). Jumlah observasi yang digunakan dalam penelitian ini sebesar 87.379 responden. Variabel penelitian yang digunakan dalam penelitian ini terbatas pada variabel yang tersedia pada kuesioner atau pertanyaan di dalam survei yaitu skor tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan, status reaksi responden menyikapi kondisi wabah Covid-19, persepsi keefektifan tindakan isolasi diri atau karantina mandiri yang dilakukannya dapat memperlambat penyebaran Covid-19, tingkat kekhawatiran tentang berita Covid-19, tingkat kekhawatiran ketika bepergian ke luar rumah, jenis kelamin, tingkat pendidikan, status pernikahan, status kesehatan, usia, status bekerja, dan jumlah anggota rumah.

Teknik Analisis Data

Metode analisis yang digunakan dalam penelitian ini yaitu analisis deskriptif untuk melihat sejauh mana tingkat kepatuhan masyarakat dalam menerapkan protokol kesehatan dengan menggunakan rata-rata skor tingkat kepatuhan. Selain itu, penelitian ini juga menggunakan analisis inferensia. Analisis inferensia yang digunakan adalah analisis regresi linear berganda. Dalam analisis regresi, terdapat beberapa asumsi klasik yang perlu dipenuhi, antara lain

1. Normalitas

Pengertian dari asumsi klasik normalitas adalah setiap residual mengikuti distribusi normal. Berdasarkan Gujarati & Porter (2009), terdapat beberapa cara untuk menguji normalitas dari residual, antara lain: histogram dari residual, *Normal Probability Plot (NPP)*, dan uji Jarque-Bera. Pada asumsi ini juga dapat menggunakan Teorema Limit Sentral (*Central Limit Theorem*) yang menyatakan bahwa jumlah variabel acak independen yang berjumlah besar cenderung ke arah distribusi normal.

2. Nonmultikolinearitas

Multikolinearitas mengindikasikan adanya hubungan linier antar beberapa atau semua variabel bebas (*independent variables*) dalam sebuah model regresi. Gujarati & Porter (2009) menyatakan bahwa asumsi multikolinearitas yang tidak terpenuhi akan menghasilkan

estimator dengan presisi yang rendah, pengujian parsial yang tidak signifikan, serta estimator dan standar error yang sensitif terhadap perubahan data yang kecil.

3. Homoskedastisitas

Pengertian dari asumsi ini adalah varians/persebaran yang sama. Asumsi homoskedastisitas baik yang terpenuhi maupun tidak akan menghasilkan estimator yang linier, *unbiased*, dan konsisten. Akan tetapi, disaat asumsi ini tidak terpenuhi, *estimator* yang diperoleh tidak memenuhi sifat varians minimum/tidak efisien atau tidak BLUE (*Best Linear Unbiased Estimator*).

4. Nonautokorelasi

Autokorelasi adalah korelasi antar observasi yang lebih banyak ditemukan pada data antar waktu atau *time series* (Greene, 2012). Asumsi nonautokorelasi yang tidak terpenuhi akan tetap menghasilkan *estimator* yang bersifat linier dan *unbiased*. Akan tetapi, *estimator* tersebut tidak bersifat BLUE karena tidak memiliki varians minimum.

Tabel 1. Deskripsi Variabel yang Digunakan dalam Penelitian.

Variabel	Keterangan
Skor tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan	Skor dihitung dari rata-rata skor yang diisi oleh responden dari 13 pertanyaan (pengetahuan tentang kebijakan <i>physical distancing</i> atau menjaga jarak; perilaku penerapan <i>physical distancing</i> atau menjaga jarak; memakai masker; memakai sarung tangan; menggunakan hand sanitizer/disinfektan; mencuci tangan selama 20 detik dengan sabun; menghindari menyentuh wajah; menghindari berjabat tangan; menghindari pertemuan atau berdiri dalam antrian panjang; menghindari menyentuh benda/permukaan benda di area publik; menghindari naik transportasi umum (termasuk transportasi online); saya menjaga jarak setidaknya dua meter dari orang lain ketika di luar rumah; dan jika saya menunjukkan gejala penyakit, saya akan segera memberi tahu orang-orang di sekitar saya)
Status reaksi responden menyikapi kondisi wabah Covid-19	Bernilai 0 jika reaksi tidak/kurang peduli, bernilai 1 jika reaksi tepat, agak/terlalu berlebihan
Persepsi keefektifan tindakan isolasi diri atau karantina mandiri yang dilakukannya dapat memperlambat penyebaran Covid-19	Bernilai 0 jika persepsi tidak/kurang efektif dan biasa saja, bernilai 1 jika persepsi cukup dan sangat efektif
Tingkat kekhawatiran tentang berita Covid-19	Bernilai 0 jika skor kekhawatiran 1 atau 2, bernilai 1 jika skor kekhawatiran 3, 4 atau 5
Tingkat kekhawatiran ketika bepergian ke luar rumah	Bernilai 0 jika skor kekhawatiran 1 atau 2, bernilai 1 jika skor kekhawatiran 3, 4 atau 5
Jenis kelamin	Bernilai 0 jika responden perempuan, bernilai 1 jika laki-laki
Tingkat pendidikan	Bernilai 0 jika tingkat pendidikan SMP ke bawah, bernilai 1 jika tingkat pendidikan SMA ke atas
Status pernikahan	Bernilai 0 jika belum menikah, cerai hidup/mati, bernilai 1 jika menikah
Status kesehatan	Bernilai 0 jika status kesehatan kurang sehat/sakit, bernilai 1 jika sehat
Usia	Usia responden
Status bekerja	Bernilai 0 jika tidak bekerja/sementara dirumahkan dan PHK, bernilai 1 jika statusnya bekerja
Jumlah anggota rumah	Jumlah anggota rumah tangga

Model analisis regresi linear berganda dilakukan dengan tujuan untuk mengetahui pengaruh faktor sosial dan demografi masyarakat terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan. *Dependent variable* dalam penelitian ini adalah skor tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan, sedangkan variabel lainnya (yaitu status reaksi responden menyikapi kondisi wabah Covid-19, persepsi keefektifan tindakan isolasi diri atau

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karantina mandiri yang dilakukannya dapat memperlambat penyebaran Covid-19, tingkat kekhawatiran tentang berita Covid-19, tingkat kekhawatiran ketika bepergian ke luar rumah, jenis kelamin, tingkat pendidikan, status pernikahan, status kesehatan, usia, status bekerja, dan jumlah anggota rumah) merupakan *independent variable*.

Model persamaan regresi yang digunakan adalah sebagai berikut:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} \dots \dots \dots (1)$$

dimana:

- Y = skor tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan
- α = konstanta
- $\beta_1, \dots, \beta_{11}$ = koefisien regresi
- X_1 = status reaksi responden menyikapi kondisi wabah Covid-19
- X_2 = persepsi keefektifan tindakan isolasi diri atau karantina mandiri yang dilakukannya dapat memperlambat penyebaran Covid-19
- X_3 = tingkat kekhawatiran tentang berita Covid-19
- X_4 = tingkat kekhawatiran ketika bepergian ke luar X_2 = rumah
- X_5 = jenis kelamin
- X_6 = tingkat pendidikan
- X_7 = status pernikahan
- X_8 = status kesehatan
- X_9 = usia
- X_{10} = status bekerja
- X_{11} = jumlah anggota rumah

HASIL DAN PEMBAHASAN

Kondisi Tingkat Kepatuhan Masyarakat dalam Penerapan Protokol Kesehatan

Hasil empiris menunjukkan secara rata-rata indeks kepatuhan responden terhadap penerapan protokol kesehatan mencapai 7,74. Bila dilihat berdasarkan jenis kelamin, ternyata responden laki-laki mempunyai skor tingkat kepatuhan yang relatif lebih rendah dibandingkan responden perempuan yaitu 7,47 berbanding 8,01. Hal ini menunjukkan bahwa responden perempuan lebih patuh dalam menerapkan protokol kesehatan dalam upaya untuk melindungi dirinya sendiri dari paparan virus Covid-19 dan pencegahan penyebaran Covid-19. Selain itu, jika dilihat berdasarkan kelompok usia, terdapat kecenderungan bahwa kaum muda lebih tidak acuh terhadap penerapan protokol kesehatan. Responden muda mempunyai rata-rata indeks kepatuhan yang relatif rendah dibandingkan dengan kaum yang lebih tua. Rata-rata skor tingkat kepatuhan responden yang berumur di atas usia 50 tahun terhadap penerapan protokol kesehatan melebihi nilai 8. Sebagaimana telah diketahui bahwa penduduk dengan umur di atas 50 tahun menjadi penduduk yang termasuk kategori rentan. Responden dengan usia yang lebih tua memiliki tingkat kesehatan yang lebih rentan terserang dan terpapar virus Covid-19, sehingga mereka akan lebih patuh menerapkan protokol kesehatan dalam kehidupan sehari-harinya.

Bila dilihat berdasarkan status perkawinan, ternyata responden yang hidup sendiri tanpa pasangan baik itu masih berstatus belum menikah mempunyai skor tingkat kepatuhan yang relatif lebih rendah dibandingkan responden yang hidup dengan memiliki pasangan atau berstatus menikah yaitu 7,48 berbanding 7,82. Hal ini kemungkinan disebabkan responden yang telah mempunyai pasangan tidak ingin terpapar Covid-19 dan menularkannya ke pasangannya. Mereka menjaga diri dan pasangannya dengan tetap terus menerapkan protokol kesehatan dalam kehidupannya. Sementara itu, skor kepatuhan protokol kesehatan pada responden yang berstatus cerai hidup sebesar 7,97 dan cerai mati sebesar 8,21. Hal ini lebih tinggi dibandingkan dengan responden yang berstatus belum menikah dan menikah. Ini dimungkinkan karena sebagian besar responden yang berstatus cerai berada pada kelompok umur yang rentan yaitu katageori sudah berumur lebih tua yang memiliki tingkat kesehatan yang relatif tidak sebaik responden yang lebih muda. Selanjutnya, berdasarkan tingkat pendidikan yang ditamatkan, secara umum dapat dikatakan bahwa semakin

tinggi jenjang pendidikan yang ditamatkan seseorang, maka akan mempunyai pengetahuan informasi mengenai Covid-19 dan mempunyai kesadaran yang tinggi mengenai begitu pentingnya menjaga diri dari penularan Covid-19. Oleh karena itu, akan semakin tinggi pula skor tingkat kepatuhan penerapan protokol kesehatan dalam kehidupan sehari-harinya.

Tabel 2. Rata-Rata Skor Tingkat Kepatuhan Masyarakat terhadap Protokol Kesehatan.

Kategori	Jenis Kelamin		Total
	Laki-laki	Perempuan	
Total	7,47	8,01	7,74
Kelompok Umur			
<=20	6,90	7,55	7,33
21-25	7,02	7,67	7,44
26-30	7,22	7,88	7,59
31-35	7,40	8,02	7,71
36-40	7,46	8,17	7,79
41-45	7,64	8,27	7,92
46-50	7,75	8,34	7,99
51-55	7,85	8,40	8,07
56-60	7,84	8,47	8,07
61-65	7,85	8,54	8,09
66+	8,00	8,46	8,13
Status Perkawinan			
Belum menikah	7,10	7,72	7,48
Menikah	7,56	8,14	7,82
Cerai mati	7,76	8,32	8,21
Cerai hidup	7,34	8,18	7,97
Pendidikan Tertinggi yang Ditamatkan			
SD	6,79	7,39	7,04
SMP	7,04	7,65	7,39
SMA/SMK	7,31	7,89	7,59
DI/II/III	7,53	8,13	7,86
DIV	7,06	7,67	7,42
S1	7,51	8,06	7,79
S2	7,76	8,19	7,96
S3	7,89	8,29	8,07

Sumber: Survei Sosial Demografi Dampak COVID-19, April 2020 (diolah)

Faktor Sosial Demografi yang Berpengaruh pada Kepatuhan Masyarakat dalam Penerapan Protokol Kesehatan

Untuk mengetahui faktor sosial demografi yang berpengaruh pada kepatuhan masyarakat dalam penerapan protokol kesehatan, penelitian ini menggunakan model regresi linear berganda. Hasil penelitian menunjukkan bahwa dengan tingkat kepercayaan 95 persen, seluruh variabel bebas secara bersama-sama berpengaruh secara signifikan terhadap skor tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan. Selain itu, sekitar 10,12 persen variasi dari tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan mampu dijelaskan oleh variasi dari variabel bebasnya, sedangkan sisanya sekitar 89,88 persen dijelaskan oleh variabel lain di luar model persamaan tersebut. Sementara itu, dari hasil uji parsial masing-masing variabel bebasnya diperoleh hasil bahwa dari variabel variabel status reaksi responden menyikapi kondisi wabah Covid-19, persepsi keefektifan tindakan isolasi diri atau karantina mandiri yang dilakukannya dapat memperlambat penyebaran Covid-19, tingkat kekhawatiran tentang berita Covid-19, tingkat kekhawatiran ketika bepergian ke luar rumah, jenis kelamin responden, tingkat pendidikan responden, status pernikahan responden, status kesehatan responden, dan usia responden signifikan memengaruhi tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan pada tingkat signifikansi sebesar 1 persen. Sementara itu, status bekerja dan jumlah anggota rumah tidak signifikan memengaruhi tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan.

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Variabel variabel status reaksi responden menyikapi kondisi wabah Covid-19 mempunyai pengaruh yang signifikan terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan dengan arah hubungan yang positif. Koefisien regresi yang diperoleh menunjukkan besaran 0,15; artinya skor tingkat kepatuhan protokol kesehatan pada masyarakat yang memiliki reaksi peduli/berlebihan pada kondisi pandemi Covid-19 lebih tinggi 0,15 dari skor patuhan masyarakat yang tidak/kurang peduli pada kondisi pandemi. Dengan kata lain, masyarakat yang memiliki reaksi dengan kepedulian yang tinggi terhadap kondisi pandemi Covid-19 memiliki kecenderungan selalu taat dan patuh pada penerapan protokol kesehatan.

Variabel persepsi keefektifan tindakan isolasi/aratina mandiri mempunyai pengaruh yang signifikan terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan dengan arah hubungan yang positif. Koefisien regresi yang diperoleh menunjukkan besaran 0,50; artinya skor tingkat kepatuhan protokol kesehatan pada masyarakat yang memiliki persepsi tindakan isolasi/karantina mandiri yang dilakukannya efektif dapat memperlambat penyebaran Covid-19 lebih tinggi 0,50 daripada skor kepatuhan masyarakat yang menganggap tidak efektif. Dengan kata lain, masyarakat yang memiliki persepsi bahwa tindakan isolasi/karantina mandiri yang dilakukannya efektif dapat memperlambat penyebaran Covid-19 memiliki kecenderungan selalu taat dan patuh pada penerapan protokol kesehatan.

Tabel 3. Hasil Persamaan Regresi Tingkat Kepatuhan Masyarakat dalam Protokol Kesehatan

Variabel	Kepatuhan Protokol Kesehatan	
	Koefisien	Standard Error
Reaksi	0,1456	0,0100***
Efektif	0,4967	0,0136***
Berita khawatir	0,1708	0,1212***
Pergi khawatir	0,3477	0,0206***
Status bekerja	0,0177	0,0119
Jenis kelamin	-0,5920	0,0100***
Ijasah	0,2713	0,0423***
Status bersama	0,1115	0,0124***
Status kesehatan	0,4344	0,0234***
Usia	0,0202	0,0005***
Jumlah_ART	-0,0040	-0,0026
Konstanta	5,5762	0,0567***

Sumber: Survei Sosial Demografi Dampak COVID-19, April 2020 (diolah dengan STATA 14.0)

Variabel tingkat kekhawatiran tentang berita Covid-19 mempunyai pengaruh yang signifikan terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan dengan arah hubungan yang positif. Koefisien regresi yang diperoleh menunjukkan besaran 0,17; artinya skor tingkat kepatuhan protokol kesehatan pada masyarakat yang khawatir tentang pemberitaan Covid-19 lebih tinggi 0,50 daripada skor kepatuhan masyarakat yang tidak/kurang khawatir. Dengan kata lain, masyarakat yang memiliki kekhawatiran yang tinggi akan adanya pemberitaan Covid-19 mempunyai kecenderungan untuk selalu taat dan patuh pada penerapan protokol kesehatan.

Variabel tingkat kekhawatiran saat bepergian ke luar rumah mempunyai pengaruh yang signifikan terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan dengan arah hubungan yang positif. Koefisien regresi yang diperoleh menunjukkan besaran 0,35; artinya skor tingkat kepatuhan protokol kesehatan pada masyarakat yang khawatir saat bepergian ke luar rumah lebih tinggi 0,35 daripada skor kepatuhan masyarakat yang tidak/kurang khawatir saat bepergian ke luar rumah. Dengan kata lain, masyarakat yang memiliki kekhawatiran yang tinggi saat bepergian ke luar rumah mempunyai kecenderungan untuk selalu taat dan patuh pada penerapan protokol kesehatan. Hal ini mengingat masih tingginya penularan Covid-19 saat berada di luar rumah jika tidak melakukan protokol kesehatan.

Variabel jenis kelamin ternyata menunjukkan adanya pengaruh yang signifikan terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan dengan arah hubungan yang negatif. Koefisien regresi yang diperoleh menunjukkan besaran -0,59; artinya skor tingkat kepatuhan

protokol kesehatan pada responden laki-laki lebih rendah 0,59 dari skor kepatuhan perempuan. Dengan kata lain, perempuan memiliki kecenderungan akan selalu taat dan patuh pada penerapan protokol kesehatan dibandingkan laki-laki.

Variabel ijazah/tingkat pendidikan tertinggi yang ditamatkan berpengaruh signifikan terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan dengan arah hubungan yang positif. Koefisien regresi yang diperoleh menunjukkan besaran 0,27; artinya skor tingkat kepatuhan protokol kesehatan pada responden yang memiliki ijazah SMA ke atas lebih tinggi 0,27 daripada responden yang hanya tamatan SMP ke bawah. Dengan kata lain, seseorang dengan tingkat pendidikan yang lebih tinggi akan memiliki kecenderungan akan selalu taat dan patuh pada penerapan protokol kesehatan mengingat pengetahuan yang dimilikinya terkait bahaya Covid-19 dan informasi mengenai pengendalian penyebaran Covid-19.

Variabel status pernikahan juga mempunyai pengaruh yang signifikan terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan dengan arah hubungan yang positif. Koefisien regresi yang diperoleh menunjukkan besaran 0,11; artinya skor tingkat kepatuhan protokol kesehatan pada responden yang menikah dan tinggal bersama pasangannya lebih tinggi 0,11 daripada responden yang belum menikah atau sudah cerai. Dengan kata lain, seseorang yang hidup bersama dengan pasangannya akan memiliki kecenderungan akan selalu taat dan patuh pada penerapan protokol. Hal ini disebabkan mereka tidak ingin terkena paparan virus Covid-19 dan menularkannya kepada pasangannya.

Selanjutnya, variabel status kesehatan ternyata mempunyai pengaruh positif dan signifikan terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan. Koefisien regresi yang diperoleh menunjukkan besaran 0,43; artinya skor tingkat kepatuhan protokol kesehatan pada responden yang dalam kondisi sehat lebih tinggi 0,43 daripada responden yang sedang sakit/kurang sehat. Dengan kata lain, seseorang yang sehat akan selalu menjaga kesehatannya dan memiliki kecenderungan akan selalu taat dan patuh pada penerapan protokol kesehatan agar tidak terpapar Covid-19.

Variabel usia/umur ternyata menunjukkan juga berpengaruh positif dan signifikan terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan dengan koefisien regresi sebesar 0,02. Artinya semakin tinggi usia responden maka semakin tinggi pula tingkat kepatuhan protokol kesehatan. Dengan kata lain, tingkat kepatuhan masyarakat terhadap penerapan protokol kesehatan lebih banyak ditemukan pada seseorang yang lebih tua/lanjut dibandingkan dari kalangan muda. Hal ini disebabkan pada kalangan tua mempunyai tingkat kerentanan yang tinggi terpapar Covid-19 sehingga seseorang yang masuk ke dalam kategori rentan akan memiliki kecenderungan akan selalu taat dan patuh pada penerapan protokol kesehatan agar tidak terpapar Covid-19.

Variabel status bekerja tidak signifikan berpengaruh terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan, walaupun mempunyai arah hubungan yang positif. Hal ini ditandai dengan koefisien regresi yang hanya sebesar 0,02; artinya dapat dikatakan tidak ada perbedaan yang berarti antara skor tingkat kepatuhan protokol kesehatan pada masyarakat yang sedang bekerja dan yang tidak bekerja. Namun demikian, dari arah hubungan dapat dikatakan bahwa selama bekerja responden akan cenderung mentaati protokol kesehatan di lingkungan kerja. Setiap lingkungan kerja/kantor telah dihimbau oleh pemerintah agar menerapkan kebijakan selalu melakukan protokol kesehatan dalam segala kegiatan ekonomi di lingkungan kerja yang harus ditaati oleh seluruh pekerja/karyawannya.

Variabel jumlah anggota rumah tangga tidak signifikan berpengaruh terhadap tingkat kepatuhan masyarakat dalam penerapan protokol kesehatan, tetapi mempunyai arah hubungan yang negatif. Hal ini ditandai dengan koefisien regresi yang relatif sangat kecil; artinya dapat dikatakan tidak ada perbedaan yang berarti antara skor tingkat kepatuhan protokol kesehatan pada masyarakat yang mempunyai jumlah anggota rumah tangga yang sedikit atau banyak.

KESIMPULAN

Kesimpulan yang dapat ditarik dari penelitian ini yaitu rata-rata indeks kepatuhan responden dari kalangan muda dan berjenis kelamin laki-laki dalam penerapan protokol kesehatan dibanding dari kalangan dengan umur lebih tua dan berjenis kelamin perempuan. Di sisi lain, status kesehatan responden mempunyai pengaruh yang cukup tinggi terhadap kepatuhan responden, di mana status

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kesehatannya rendah (kategori rentan yang biasanya dialami penduduk usia lanjut usia) cenderung akan lebih patuh pada protokol kesehatan. Selain itu, hasil empiris juga menunjukkan seseorang yang masih berstatus telah menikah dan mempunyai tingkat pendidikan yang tinggi akan lebih mematuhi penerapan protokol kesehatan.

Beberapa karakteristik sosial, demografi, dan ekonomi dari responden yang berpengaruh pada tingkat kepatuhan terhadap penerapan protokol kesehatan antara lain status reaksi responden menyikapi kondisi wabah Covid-19, persepsi keefektifan tindakan isolasi diri atau karantina mandiri yang dilakukannya dapat memperlambat penyebaran Covid-19, tingkat kekhawatiran tentang berita Covid-19, tingkat kekhawatiran ketika bepergian ke luar rumah, jenis kelamin responden, tingkat pendidikan responden, status pernikahan responden, status kesehatan responden, dan usia responden. Diharapkan masyarakat lebih patuh pada penerapan protokol kesehatan sesuai dengan anjuran dari pemerintah. Selain itu, pemerintah diharapkan lebih intens lagi dalam pengawasan untuk ketertiban perilaku masyarakat dalam mematuhi penerapan protokol kesehatan dalam lingkungannya demi pengendalian penyebaran pandemi Covid-19.

Rekomendasi Penelitian Berikutnya

Terdapat beberapa rekomendasi yang dapat dilakukan untuk penelitian berikutnya. Pertama, perlu dilakukan analisis dengan mengikutsertakan variabel pemberlakuan kebijakan PSBB pada setiap daerah kabupaten/kota untuk mendapatkan gambaran lebih mendalam mengenai keefektifan kebijakan PSBB. Kedua, perlu memasukkan jumlah korban yang terpapar Covid-19 di dalam model. Ketiga, perlu memasukkan variabel demografi dari sisi psikologi responden di masa pandemi. Keempat, perlu dilakukan kajian analisis lebih mendalam dengan mengeksplor berbagai kajian teori atau literatur baik mengenai pandemi virus Covid-19 maupun virus sejenis di masa lalu sebagai perbandingan.

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LEMBAR KONSULTASI PEMBIMBINGAN PROPOSAL DAN SKRIPSI
PROGRAM STUDI ILMU KEPERAWATAN
UNIVERSITAS dr. SOEBANDI

Judul Skripsi : Faktor-Faktor Yang Mempengaruhi Tingkat Kepatuhan Masyarakat Dalam Mematuhi Protokol Kesehatan Di Masa Pandemic Covid-19

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Pembimbing I				Pembimbing II			
No.	Tanggal	Materi yang dikonsulkan dan masukan pembimbing	TTD DPU	No.	Tanggal	Materi yang dikonsulkan dan masukan pembimbing	TTD DPA
1	16 Oktober 2020	Bab 1 latar belakang – revisi dikarenakan tidak sesuai dengan masalah, skala, kronologis		1	12 november 2020	Konsul Judul dan membuat latar belakang	
2	26 Januari 2020	Revisi Bab 1 – masalah kasusnya semakin banyak harus di masyarakat – tingkat penaggulangnya bagaimana – seperti contoh kebijakan pemerintah Revisi Bab 3 – teori teori saja yang dituliskan		2	28 november 2021	Acc judul dan melanjutkan bab 1	
3	9 Februari 2020	Revisi di Tujuan Umum dan Tujuan Khusus		3	07 Desember 2020	Konsul Revisian bab 1 Kurang penekanan dibagian pengetahuan dan tambahkan poin poin yang akan di teliti	
4	3 Maret 2020	Di Lanjutkan Bab 2-3		4	07 Desember 2020	Revisi Bab 2 Kerangka Teori dan lanjutkan Bab 3	
5	10 Maret 2021	Revisi Bab 3 Analisa Picos		5	14 Desember 2020	Revisi Bab 3 kerangka konsep itu harus berdasarkan teori yang ada di bab 2	



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6	17 maret 2021	Acc Sempuro		6	12 April 2021	Acc Sempuro	
7	28 Juli 2021	Mengkonsulkan Revisian Proposal dan Lanjut Bab selanjutnya		7	12 Juli 2021	Mengkonsulkan Revisian Proposal + Bab 2 di tambahkan faktor faktor yang mempengaruhi kepatuhan	
8	30 Juli 2021	Revisi Bab 4 – karakteristik responden jangan hanya lansia dan menjelaskan jumlah sampel pada masing masing faktor faktor yang mempengaruhi Revisi Bab 5 – topic sesuaikan dengan tujuan khusus		8	28 Juli 2021	Melanjutkan Bab 4,5 dan 6	
9	1 Agustus 2021	Revisi Abstrak		9	30 Juli 2021	Revisi kerangka Teori dan disesuaikan dengan Bab 2	
10	2 Agustus 2021	Revisi Bab 5 – Harus di analisa bukan di menulis ulang dari table, didalam pembahasan tidak di kutip secara menyeluruh seperti bab 2 dan dinarasikan dalam 1 paragraf.		10	04 Agustus 2021	Revisi Tujuan Khusus dan Bab 6	
11	3 Agustus	Revisi Bab 6 – disesuaikan dan di cek lagi faktor faktornya		11	10 Agustus 2021	Revisi BAB 5 Pembahasan - Terdiri dari fakta, teori dan opini	
12	04 Agustus 2021	Acc Seminar Hasil		12	16 Agustus 2021	Revisi Abstrak - Pakai format IMRAD	
				13	18 Agustus 2021	Acc Seminar Hasil	

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