

**PENGETAHUAN ORANG TUA TENTANG PERTOLOGAN
PERTAMA LUKA BAKAR PADA ANAK
“*LITERATURE REVIEW*”**

SKRIPSI



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**PROGRAM STUDI ILMU KEPERAWATAN
FAKULTAS ILMU KESEHATAN
UNIVERSITAS dr.SOEBANDI
2022**

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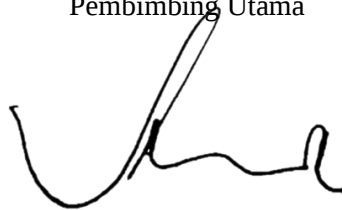
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2022**

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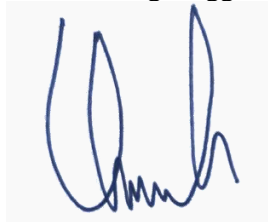
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Skripsi yang berjudul " Pengetahuan Orang tua tentang Pertolongan Pertama Luka Bakar pada Anak *Literature Review*" telah diuji dan disahkan oleh Program Sarjana Keperawatan Universitas dr. Soebandi Jember pada:

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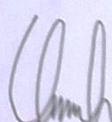
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Menyatakan dengan sesungguhnya bahan skripsi *Literature Review* saya yang berjudul “Pengetahuan Orang tua tentang Pertolongan Pertama Luka Bakar pada Anak *Literature Review*” adalah karya saya sendiri dan belum pernah diajukan untuk memperoleh gelar kesarjanaan suatu perguruan tinggi manapun. Adapun bagian-bagian tertentu dalam penyusunan Skripsi *Literatur Review* ini yang saya kutip dari karya hasil orang lain telah dituliskan sumbernya secara jelas sesuai dengan norma, kaidah, dan etika penulisan ilmiah. Apabila kemudian hari ditemukan adanya kecurangan dalam penyusunan skripsi *Literature Review* ini, saya bersedia menerima sanksi sesuai dengan peraturan perundang - undangan yang berlaku.



Jember, 11 Agustus 2022

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SKRIPSI

**PENGETAHUAN ORANG TUA TENTANG PERTOLOGAN
PERTAMA LUKA BAKAR PADA ANAK**

LITERATURE REVIEW

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MOTTO

“Maka sesungguhnya bersama kesulitan itu ada kemudahan,”

(QS Al Insyirah: 5)

"Kerjakanlah urusan duniamu seakan-akan kamu hidup selamanya dan laksanakanlah urusan akhiratmu seakan-akan kamu akan mati besok,”

(HR Ibnu Asakir)

“Mereka mengawasi anda, mereka iri pada anda dan pada akhirnya mereka meniru anda”

(Pablo Escobar)

“Suksesmu tidak diukur dari seberapa pintar kamu, namun seberapa banyak kamu memiliki banyak relasi.”

(Ahmad Ilham Mandavicia)

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Selama proses penyusunan penulis dibantu dan dibimbing oleh berbagai pihak, oleh karena itu penulis mengucapkan terimakasih kepada :

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Penulis

ABSTRAK

Ilham, Ahmad*. Bachri, Syaiful, **. Wirasakti, Guruh***. 2022 “**Pengetahuan Orang tua tentang Pertolongan Pertama Luka Bakar pada Anak**”. Skripsi. Program Studi Keperawatan Universitas dr. Soebandi Jember

Latar belakang : Luka bakar yaitu dampak dari suatu agen eksternal yang menimbulkan kerusakan baik fisik maupun mental khususnya pada anak. pengetahuan orang tua terhadap penanganan luka bakar masih rendah. Tujuan penelitian ini adalah untuk meningkatkan pengetahuan orang tua tentang pencegahan luka bakar pada anak. **Metode :** Penelitian ini adalah literatur *review* dengan menggunakan desain studi sistematis *review* yang diambil menggunakan empat *database* yaitu *pubmed*, *science direct*, *pro quest* dan *google scholar* dengan rentang tahun pencarian 2017-2021. Kata kunci yang digunakan adalah pengetahuan, orang tua, pertolongan pertama, luka bakar, dan anak. Untuk menilai kualitas artikel dalam penelitian ini menggunakan PRISMA dan analisis artikel menggunakan metode PICOS. **Hasil dan Analisa :** Dari tujuh artikel yang di *review* pengetahuan terbanyak ada tiga artikel yaitu kategori pengetahuan sangat lemah, buruk dan sangat kurang, kemudian terdapat dua artikel dengan kategori pengetahuan mengetahui dan memadai, dan artikel lainnya kategori pengetahuan sedang dan baik. **Kesimpulan :** Pengetahuan orang tua tentang pertolongan pertama luka bakar pada anak masih rendah dan perlu ditingkatkan sehingga orang tua mampu memberikan pertolongan pertama yang cepat dan tepat.

Kata Kunci: Anak, Luka Bakar, Pengetahuan, Pertolongan Pertama

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ABSTRACT

Ilham, Ahmad*. Bachri, Syaiful**, Wirasakti, Guruh***. 2022 **Parental Knowledge about First Aid for Burns in Children**. Thesis. Nursing Study Program at the University of Dr. Soebandi Jember

Intro : Burns are the impact of an external agent that causes physical and mental damage, especially in children. Parents' knowledge of the management of burns is still low. The purpose of this study was to increase the knowledge of parents about the prevention of burns in children. **Method :** This research is a literature review using a systematic review study design that was taken using four databases, namely pubmed, science direct, pro quest and google scholar with a vulnerable search year 2017-2021. The keywords used are knowledge, parents, first aid, burns, and children. To assess the quality of articles in this study using PRISMA and article analysis using the PICOS method. **Result and Analy :** Of the seven articles reviewed for the most knowledge, there are three articles, namely the category of knowledge is very weak, bad and very lacking, then there are two articles with the category of knowing and adequate knowledge, and other articles in the category of moderate and good knowledge. **Dissc :** Parents' knowledge about first aid for burns in children is still low and needs to be improved so that parents are able to provide fast and appropriate first aid.

Keywords: Burns, Children, First Aid, Knowledge

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DAFTAR SINGKATAN

TBSA	: <i>Total Body Surface Area</i>
WHO	: <i>World Health Organization</i>
USG	: <i>Ultrason</i>
ET	: <i>Endotrakeal</i>
NG	: <i>Nasogratik</i>
IV	: <i>Intravena</i>
IO	: <i>Intraosseous</i>

BAB 1

PENDAHULUAN

1.1 Latar Belakang

Luka bakar yaitu dampak dari suatu agen eksternal yang menimbulkan kerusakan baik fisik maupun mental (Jugmohan *et al.*, 2016). Luka bakar termasuk salah satu masalah kesehatan yang serius di dunia, khususnya pada anak di negara berkembang (Wardhana *et al.*, 2017). Luka bakar pada anak mengakibatkan luka bakar yang lebih parah daripada luka bakar orang dewasa. Luka bakar tersebut antara lain yaitu komplikasi akut yang mengancam jiwa (kehilangan cairan, obstruksi jalan napas, gagal ginjal, Super-infeksi) dan komplikasi kronis yang signifikan serta cacat dan trauma psikologis yang membutuhkan pertolongan pertama (Ja *et al.*, 2017).

World Health Organization (World Health Organization, 2018) menyatakan bahwa hampir 96.000 anak di bawah usia 14 tahun terluka parah akibat luka bakar yang berhubungan dengan kebakaran. Sebagian besar luka bakar terjadi pada anak dari keluarga berpenghasilan rendah dan menengah. Di Afrika sub-Sahara diperkirakan bahwa antara 18.000 sampai 30.000 anak di bawah usia 14 meninggal setiap tahun akibat luka bakar (Gessesse & Yitayew, 2020). Prevalensi luka bakar di Indonesia sebesar 0,7%. Prevalensi tertinggi terjadi pada usia 1-4 tahun (Bagus, 2020). Kasus luka bakar berjumlah 7.152 terdampak luka bakar dengan 2,3% terjadi pada anak usia dibawah 14 tahun (Kementerian Kesehatan Republik Indonesia, 2018).

Penyebab tertinggi luka bakar pada anak yaitu disebabkan oleh air panas 52%, api 26%, listrik 6%, bahan kimia 1%, dan kontak dengan 15%. Penyebab luka bakar bisa berbeda-beda antar daerah dan di rumah sakit. Umumnya luka bakar yang terjadi dapat dicegah. Berdasarkan data-data tersebut di atas dapat disimpulkan bahwa luka bakar memiliki jumlah kasus yang relatif banyak (*high volume*) dan mempunyai resiko morbiditas dan mortalitas yang tinggi (*high risk*), sehingga cenderung memerlukan biaya yang tinggi dan sumber daya yang banyak (*high cost*) (Kementerian Kesehatan Republik Indonesia, 2019) .

Dampak luka bakar dapat menimbulkan kerusakan kulit serta organ, dapat merusak jaringan otot, tulang, pembuluh darah dan jaringan epidermis. Luka bakar mengakibatkan komplikasi diantaranya shock hipovolemik, ketidakseimbangan elektrolit, infeksi dan masalah distress pernafasan. Akibat dari luka bakar akan mempengaruhi morbiditas serta derajat cacat yang relatif tinggi dibandingkan dengan cedera luka lainnya dan membutuhkan biaya tinggi sehingga penderita luka bakar membutuhkan perawatan yang intensif di unit khusus. Pengurangan risiko yang ditimbulkan oleh luka bakar yang cukup kompleks maka diperlukan penanganan yang tepat dan baik, sehingga tidak mempengaruhi penyembuhan luka (Revilla, 2019).

Pengetahuan orang tua tentang penanganan luka bakar masih sangat rendah hal ini terjadi pada kebiasaan banyak orang tua yang memberikan pertolongan pertama pada kasus penanganan luka bakar menggunakan ramuan atau pasta gigi yang dioleskan pada luka bakar, yang dipercaya akan mengurangi dampak dan memberikan sensasi dingin pada daerah yang terluka. Hal ini semakin memperburuk kondisi penyebaran luka bakar (Herlianita *et al.*, 2020). Pertolongan pertama yang harus dilakukan pertama kali adalah membebaskan tubuh penderita dari benda-benda yang bisa menyebabkan kebakaran. Bagian tubuh yang terbakar cukup direndam/disiram dengan suhu ruangan. Luka bakar yang luas perlu segera mendapatkan tambahan cairan untuk mencegah dehidrasi, jika wilayah terbakar >10% penderita harus dirawat di Rumah Sakit (Rachmawati *et al.*, 2021)

Orang tua dalam melakukan pertolongan pertama harus memiliki pengetahuan tentang penanganan luka bakar yang baik, karena luka bakar dapat menyebabkan kulit mengering, mengelupas, melepuh, kemerahan, kecacatan serta kematian. Pengetahuan tentang penanganan luka bakar dapat dipengaruhi oleh berbagai hal, diantaranya pendidikan, usia, status pekerjaan, riwayat luka bakar pada anak, dan riwayat memperoleh informasi tentang luka bakar (Herlianita *et al.*, 2020). Pengetahuan Orang tua yang kurang, berdampak pada frekuensi anak mengalami luka bakar lebih banyak dan mengalami keterlambatan pertolongan utama (Halil *et al.*, 2021).

Pertolongan pertama merupakan aspek penting dalam langkah melakukan pertolongan darurat luka bakar. Pertolongan pertama yang tepat adalah berupa

manajemen medis, yang bertujuan untuk mengurangi keparahan luka bakar (Greenhalgh, 2019). Pertolongan pertama yang cepat pada luka bakar dapat mengurangi keseriusan dan kedalaman kerusakan jaringan, yang juga akan mengurangi efek sampingan, termasuk mengurangi durasi rawat inap dan tingkat intervensi bedah (Bennett *et al.*, 2019). Apabila tidak segera ditolong dengan tindakan yang tepat dapat menjadi sesuatu yang gawat dan mengancam keselamatan jiwa pada anak. Faktor lingkungan rumah tangga tempat tinggal anak yang tidak aman merupakan faktor yang paling berperan dalam kejadian luka bakar pada anak dan kemudian disusul oleh faktor pengetahuan orang tua yang masih rendah (Mortada *et al.*, 2020)

Berdasarkan latar belakang diatas diketahui bahwa pengetahuan orang tua terhadap penanganan luka bakar masih kurang tepat. Ada banyak cara pertolongan luka bakar yang dilakukan. Namun kebanyakan orang tua salah dalam melakukan pertolongan pertama luka bakar. Dengan demikian peneliti tertarik untuk melakukan *literature review* tentang “Pengetahuan Orang tua tentang Pertolongan Pertama Luka Bakar Pada Anak”.

1.2 Rumusan Masalah

Berdasarkan latar belakang diatas dapat di rumuskan masalah penelitian *Literature Review* sebagai berikut. “Bagaimanakah Pengetahuan Orang tua tentang Pertolongan Pertama Luka Bakar Pada Anak?

1.3 Tujuan Penelitian

Mendeskripsikan pengetahuan orang tua tentang pertolongan pertama luka bakar pada anak.

1.4 Manfaat Penelitian

1.4.1 Manfaat Teoritis

Hasil *literature review* diharapkan dapat digunakan sebagai bahan dan bacaan referensi yang dapat membantu proses pembelajaran serta menambah wawasan pada pengetahuan orang tua tentang pertolongan pertama luka bakar pada anak.

1.4.2 Manfaat Praktis

Hasil *literature review* ini digunakan sebagai bahan acuan memberikan edukasi pengetahuan untuk meningkatkan pengetahuan orang tua tentang pertolongan pertama luka bakar pada anak.

BAB 2

TINJAUAN PUSTAKA

2.1 Konsep Luka Bakar

2.1.1 Defnisi Luka Bakar

Luka bakar adalah suatu kondisi kulit yang mengalami kerusakan atau hilangnya jaringan normal yang disebabkan oleh kontak langsung dengan sumber panas seperti kobaran api, terpapar air panas, kontak dengan benda panas, sengatan listrik, paparan dengan bahan kimia, dan paparan radiasi. (Kara, 2018)

2.1.2 Epidiomologi Luka Bakar

Secara global, Berdasarkan *World Health Organization* (World Health Organization, 2018) menyebutkan 180.000 kematian disebabkan luka bakar, sebagian besar kejadian luka bakar terjadi pada anak. Kasus luka bakar di Indonesia berjumlah 7.152 terdampak luka bakar dengan 2,3% terjadi pada anak usia dibawah 14 tahun (Kementerian Kesehatan Republik Indonesia, 2018)

2.1.3 Etiologi Luka Bakar

Berdasarkan etiologi luka bakar terbagi menjadi 4, yaitu luka bakar thermal, luka bakar akibat aliran listrik, bahan kimia, dan api (Dewi, 2016). Berikut penjelasan etiologi luka bakar :

1. Termal

Luka bakar termal yaitu Luka bakar yang disebabkan karena suhu yang panas, paling sering terjadi akibat tersiram air panas yang akan membentuk luka lepuh, hingga terjadi denaturasi protein, pembentukan oksigen radikal

bebas, dan akhirnya berakibat pada rusaknya sel dengan pembentukan bekas kulit akibat luka bakar

2. Luka bakar listrik

Luka bakar listrik adalah luka bakar disebabkan oleh kontak langsung dengan aliran listrik dengan badan, dan sering lukanya lebih serius dari apa yang terlihat didasar kulit. Tubuh manusia dapat bertindak sebagai penghantar energi listrik dan mengakibatkan kerusakan jaringan akibat panas yang ditimbulkannya.

3. Luka bakar kimiawi

Luka bakar kimiawi adalah luka bakar yang disebabkan paparan zat asam atau basa. Luka bakar akibat paparan zat basa umumnya lebih dalam dibandingkan zat asam. Hal ini karena zat basa menyatu dengan jaringan lemak di kulit sehingga menyebabkan kerusakan jaringan yang lebih progresif, sedangkan luka bakar akibat asam akan menyebabkan koagulasi protein.

4. Luka bakar api

Luka bakar api adalah luka bakar yang sering berhubungan dengan cedera inhalasi dan penyerta lainnya, serta cenderung mengenai kulit yang lebih dalam. Luka bakar api dan luka bakar tersiram air panas adalah penyebab paling umum luka bakar pada anak-anak di seluruh dunia.

2.1.4 Klasifikasi Luka Bakar

Berdasarkan klasifikasi kedalaman luka bakar menurut (Greenhalgh, 2019) terbagi menjadi 3 derajat :

1. *Superficial Thickness* atau Derajat 1 (satu).

Luka bakar terjadi berada di dalam epidermis kulit pada tingkat ini. Gambaran klinis luka bakar derajat satu adalah munculnya eritema (terbakar sinar matahari), tersiksa, dan tidak menghilangkan bekas luka. Untuk memulai dengan luka bakar derajat sembuh dalam 3-6 hari

2. *Partial Thickenss Burn* Derajat 2 (dua)

Derajat 2 (dua) terdapat 2 macam,yaitu :

1. *Partial thickness - superficial* atau Derajat 2 Superfisial (Kulit Luar)

Luka bakar jenis superficial partial thickness burn meliputi semua bagian epidermis dan dermis stratum papiler. Gambaran klinis luka bakar jenis ini adalah munculnya bula atau gelembung berisi cairan, nyeri, dan berwarna merah muda. Luka bakar dapat sembuh dalam 7-20 hari.

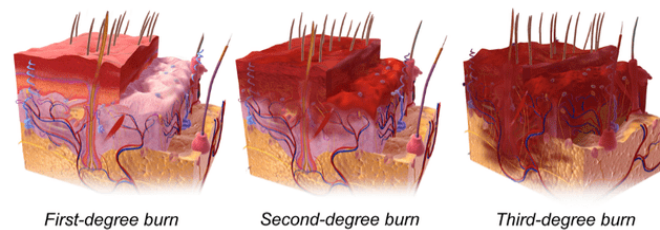
2. *Partial thickness - deep* atau Derajat 2 Dalam

Luka bakar jenis deep partial thickness burn mempengaruhi semua bagian epidermis dan dermis, termasuk stratum reticularis Gambaran klinis luka bakar ini dapat berupa rasa nyeri yang berkurang, warna keputihan, dengan atau tanpa bula. Luka bakar sembuh dalam 2 minggu dengan jaringan parut yang luas.

3. *Full thickness* atau Derajat 3 (Tiga)

Pada luka bakar derajat 3, ditandai dengan seluruh epidermis dan dermis

mengalami kerusakan, bahkan bisa merusak jaringan-jaringan lemak maupun otot walaupun jaringan tersebut tidak mengalami nekrosis.



Gambar. 2.1 Kedalaman Derajat Luka Bakar

(*American Burn Association*, 2018) mengklasifikasikan tingkat keparahan pada luka bakar menjadi 3 bagian berdasarkan luas permukaan, penyebab, dan luas luka bakar dilihat dari presentase TBSA yaitu luka bakar *minor* (ringan), *moderat* (sedang), *mayor* (berat) seperti pada tabel 2.1.

Tabel 2.1 Tingkat Keparahannya

Luka Bakar Ringan	Luka Bakar Sedang	Luka Bakar Berat
1. Luka bakar derajat II <10% pada dewasa	1. Luka bakar derajat II 10%-20% pada dewasa	1. Luka bakar derajat II 20% atau lebih pada dewasa
2. Luka bakar derajat II <5% pada anak-anak atau dewasa tua (>50 th)	2. Luka bakar derajat II 5%-10% pada anak-anak atau dewasa tua (>50 th)	2. Luka bakar derajat II 10% atau lebih pada anak-anak atau dewasa tua (>50 th)
3. Luka bakar derajat III <2%	3. Luka bakar derajat III 2%-5%	3. Luka bakar derajat III >5% atau lebih
		4. Luka bakar mengenai tangan, wajah, telinga, mata kaki dan genetalia

(*American Burn Association*, 2018)

2.1.5 Perhitungan Luas Luka Bakar

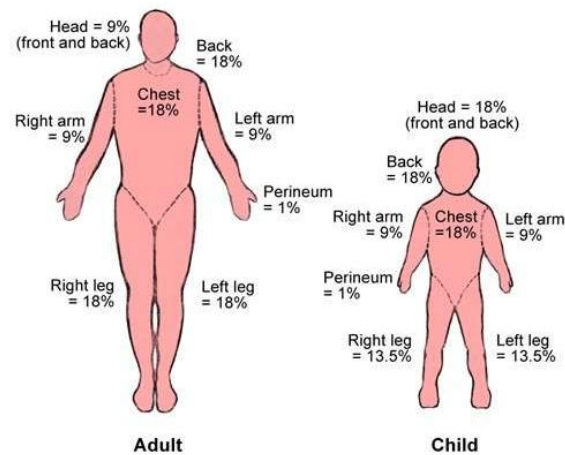
Perhitungan luas luka bakar dapat dihitung dengan menggunakan presentase *Total Body Surface Area* (%TBSA) penghitungan TBSA diberikan untuk pemberian cairan resusitasi dan memberi tanda bagi pasien beresiko tinggi mengalami komplikasi (Broadis *et al.*, 2017). Semakin besar presentase TBSA pasien luka bakar, maka semakin tinggi tingkat kematian akibat luka bakar (Jugmohan *et al.*, 2016). Adapun metode - metode untuk mengukur perhitungan luas luka bakar yaitu :

1. Metode *Wallace Rule of Nines* (Rumus Sembilan)

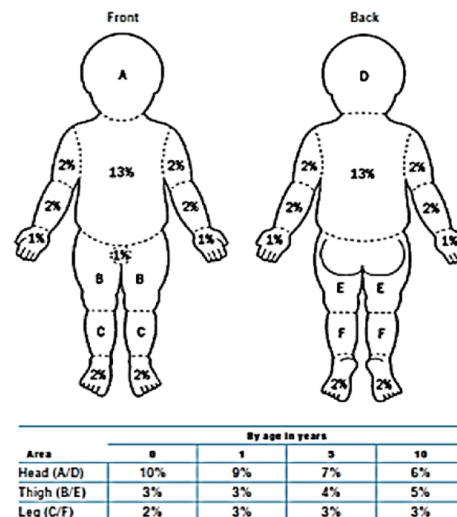
Rumus Sembilan merupakan cara yang cepat untuk menghitung luas daerah yang terbakar. Sistem tersebut menggunakan persentase dalam kelipatan sembilan terhadap permukaan tubuh yang luas. Metode ini dinilai akurat pada luka bakar dewasa dan kurang akurat pada luka bakar anak usia kurang dari 10 tahun (Kara, 2018).

2. Metode *Lund and browder*

Metode *Lund and browder* merupakan metode pengukuran luas luka bakar yang paling akurat untuk luka bakar anak khususnya balita. Metode ini dapat menyesuaikan berbagai anatomi bentuk tubuh berdasarkan usia sehingga dinilai akurat mengukur luas luka bakar balita (Broadis *et al.*, 2017).



Gambar 2.2 Wallace Rule of Nines pada orang dewasa dan anak



Gambar 2.3 Lund and browder chart

2.1.6 Komplikasi Luka Bakar

Komplikasi luka bakar menurut (Mayo clinic, 2020) dilihat dari tingkat kedalaman maupun keparahan dapat meliputi:

- 1) Infeksi bakteri, yang dapat menyebabkan infeksi aliran darah (sepsis)
- 2) Kehilangan cairan, termasuk volume darah rendah (hipovolemia)
- 3) Suhu tubuh yang sangat rendah (hipotermia)

- 4) Masalah pernapasan dari asupan udara panas atau asap
- 5) Bekas luka atau area bergerigi yang disebabkan oleh pertumbuhan berlebih dari jaringan parut (keloid)
- 6) Masalah tulang dan sendi, seperti ketika jaringan parut menyebabkan pemendekan dan pengencangan kulit, otot atau tendon (kontraktur).

2.1.7 Konsep Pertolongan Pertama Luka Bakar Pada Anak

Pertolongan pertama didefinisikan pada tahun 2010 oleh *American Heart Association* dan *American Red Cross Guidelines* sebagai “penilaian dan intervensi yang dapat dilakukan oleh pengamat atau korban dengan peralatan medis minimal atau tanpa peralatan medis. Tujuan utama pertolongan pertama adalah untuk meringankan penderitaan, meningkatkan penyembuhan, dan mengurangi kerusakan. Selain itu, pertolongan utama yang diterapkan pada menit pertama setelah cedera sangat penting bagi korban karena menentukan perjalanan penyakit di masa depan dan kemungkinan komplikasi. (Chowdhury & Chakraborty, 2017).

2.1.8 Klasifikasi Pertolongan Pertama Luka Bakar Anak

1. Pertolongan Pertama *Pre-Hospital*

Pertolongan pertama *pre-hospital* atau pertolongan pertama pada lokasi yang adekuat pada pasien luka bakar sebelum pasien dirujuk ke fasilitas kesehatan memadai dapat memberikan hasil yang baik. Tatalaksana rujukan ini setelah memastikan tidak adanya cedera yang mengancam nyawa. pencapaian baik dinilai dari menurunnya angka mortalitas pada

pasien, serta hasil penyembuhan luka yang optimal baik secara fungsional maupun estetik.

Berdasarkan (The Australian and New Zealand Burn Association, 2016) Pertolongan pertama pada lokasi kejadian kebakaran mencakup 3 aspek yaitu:

a) Menghentikan Proses Pembakaran

Tindakan menghentikan proses terjadinya luka bakar bertujuan untuk meminimalisasi kerusakan jaringan akibat panas. Penanganan pertama luka bakar adalah menghentikan sumber panas seperti api atau air panas. Secara teori, api membutuhkan tiga unsur, yaitu oksigen, bahan bakar, dan *ignition*. Eliminasi salah satu unsur tersebut akan menghentikan api. Pada kasus luka bakar akibat api, tubuh manusia berperan sebagai unsur bahan bakar, sehingga pasien harus dipisahkan dari sumber panas dan dibawa ke tempat aman. Api dapat dipadamkan dengan cara korban berguling di tanah secara aktif maupun pasif menerapkan *Stop* berhenti berhegerak, *Drop* tiarap ke tanah, *Cover (face)* menutupi wajah & *roll technique* berguling untuk memadamkan api. Pakaian yang terbakar harus segera dilepaskan secepat mungkin. Sangat penting untuk mengingat keselamatan terhadap penolong agar tidak mengalami cedera yang serupa.

b) Mendinginkan Suhu Luka Bakar

Upaya mendinginkan luka bakar bertujuan untuk mengurangi produksi mediator inflamasi dan mempertahankan viabilitas zona stasis. Sesuai dengan rekomendasi (The Australian and New Zealand Burn Association,

2016), pertolongan pertama dilakukan dengan mendinginkan luka bakar menggunakan air mengalir dengan suhu ruangan selama 20 menit sesegera mungkin. Proses pendinginan dengan air mengalir akan membersihkan luka dan membilas agen berbahaya, mengurangi reaksi inflamasi dengan menstabilkan sel mast dan pelepasan histamin maupun sitokin, serta menghentikan progresi nekrosis pada zona stasis. Pendinginan luka bakar mempertahankan struktur sitoplasma dan membran basalis, yang akan mensinyalir regenerasi epidermis. Hal ini mempercepat proses penyembuhan yang lebih adekuat dan meminimalisasi perlunya tindakan bedah dan pembentukan parut patologis.

3) Lepaskan pakaian dan perhiasan

Jika pakaian pasien masih melekat pada luka bakar segera gunting pakaian yang disekitarnya yang tidak menempel dengan luka bakar. Jangan memaksa untuk melepaskannya

4) Meredakan Nyeri

Dengan tindakan pendinginan menggunakan air mengalir pada area luka bakar selama 20 menit dan menutupnya dengan bahan yang steril dapat mengurangi rasa nyeri yang timbul

5) Jangan memecahkan bula (blisters) pada luka bakar

Tindakan memecahkan bula sedini mungkin masih menjadi perdebatan. Oleh sebab itu, tindakan ini perlu dilakukan oleh tim medis spesialis luka bakar dan tidak boleh dilakukan oleh awam

6) Hindari kontaminasi dengan menutup luka bakar

Area luka bakar harus dibungkus dengan bahan yang bersih, kedap udara, kering, dan tentunya dengan bahan yang steril. Selain itu, bahan yang bersifat transparan dapat memudahkan inspeksi luka, tujuan dari membungkus luka bakar antara lain:

- (1) Meminimalisir kontaminasi dengan melindungi luka bakar dari infeksi sekunder.
- (2) Mengurangi nyeri akibat paparan udara di lingkungan terhadap jaringan saraf yang mengalami kerusakan (pada luka bakar *grade II* / *Partial Thickness Burn*).
- (3) Memberikan perlindungan selama transportasi ke rumah sakit.

7) Periksa adakah cedera lainnya

Pada korban yang diduga mengalami trauma pada kepala dan tulang belakang perlu dilakukan immobilisasi secara tepat agar tidak memperparah trauma.

8) Tenangkan korban

Psikologis korban juga harus diperhatikan, namun keluarga korban juga perlu ditenangkan agar tindakan dapat dilakukan dengan tepat.

9) Melakukan rujuk

Rujuk jika pasien mengalami syok hipovolemik dan komplikasi lainnya

2. Pertolongan Pertama *Hospital*

Dalam (American Burn Association, 2018) Penatalaksanaan luka bakar di rumah sakit meliputi 2 macam pertolongan pertama, yaitu *primer survey* dan *sekunder survey* :

1) Survey Primer

Survey primer terdiri dari *Airway, Breathing, Circulation, Disability, and Exposure* :

(1) *Airway*

Periksa Adanya masalah pada jalan nafas baik aktual maupun potensial karena benda asing, darah, muntah, cairan dan lidah jatuh. Pada kasus luka bakar perlu dicurigai adanya pembengkakan faring/laring akibat cedera inhalasi, biasanya dimanifestasikan dengan suara stridor. Jika terjadi gangguan pada Airway setelah memeriksa jalan nafas maka hal yang harus dilakukan bersihkan jalan nafas dan segera lakukan head tilt, chin lift dan jaw thrust dan manajemen trauma servikal

(2) *Breathing*

Anak-anak mungkin memiliki sedikit tanda fisik atau radiografi dari cedera paru dalam 24 jam pertama pasca luka bakar. Pasien anak dengan dugaan cedera inhalasi harus siap untuk segera dipindahkan ke pusat luka bakar. Selain itu, anak-anak memiliki dada yang lebih lentur dan cenderung menggunakan otot perut untuk bernafas ketika dibandingkan dengan orang dewasa. Adalah penting bahwa praktisi mendengarkan suara napas bilateral (dan sebaiknya rontgen dada) untuk

memastikan posisi yang tepat dari tabung endotrakeal (ET) sebelum transfer. Sangat penting bahwa ET tabung dan tabung NG diamankan dengan baik. Seorang anak harus memiliki kepala tempat tidur ditinggikan setidaknya 30 derajat kecuali: dikontraindikasikan oleh cedera atau kondisi medis terkait. Ketinggian membantu membuka jalan napas dan menurun oedema kepala dan leher.

(3) Circulation

Anak dengan luka bakar 10% TBSA sebagian ketebalan atau komponen ketebalan penuh harus dirujuk ke rumah sakit untuk perawatan definitif. Setelah jalan napas diamankan, selanjutnya tindakan penetapan akses intravena dan pemberian cairan intravena. Keterlambatan inisiasi resusitasi cairan dapat mengakibatkan gagal ginjal akut dan kematian yang lebih tinggi. Seperti pada pasien dewasa dengan luka bakar, Lactated Ringer (LR) adalah cairan resusitasi awal pilihan. Sisipkan sebuah kanul intravena dan segera mulai resusitasi jika luka bakar tampak jelas > 20% TBSA. Selama perawatan survei utama di rumah sakit kapasitas resusitasi cairan adalah sebagai berikut:

- a. Usia 5 tahun ke bawah: 125 ml LR per jam
- b. 6-13 tahun: 250 ml LR per jam
- c. 14 tahun ke atas: 500 ml LR per jam (dianggap sebagai orang dewasa)

Cairan ini harus diberikan sebelum berat badan pasien diperoleh dan persentase luka bakar TBSA yang tepat adalah dihitung. Semakin dini

kanula intravena dicoba, semakin mudah untuk ditempatkan. Jika tersedia, USG dapat membantu dalam memandu penempatan IV. Setelah syok terjadi, menemukan pembuluh darah mungkin cukup sulit. Pada pasien dengan luka bakar yang luas, kanula intravena dapat dimasukkan melalui kulit yang terbakar. Periferal lubang besar akses lebih disukai. Infus intraosseous (IO) mungkin menyelamatkan nyawa pada anak dengan luka bakar parah, tetapi diindikasikan hanya jika penempatan jalur intravena tidak berhasil. Sindrom kompartemen pada ekstremitas memiliki dihasilkan dari penempatan jalur IO yang tidak tepat. Garis IO harus dilepas segera setelah kanulasi IV terpasang. Kateterisasi vena femoralis adalah pilihan berikutnya untuk anak-anak dengan luka bakar masif. Akses intravena dengan pemotongan kadang-kadang diperlukan jika tidak ada akses yang tersedia untuk resusitasi. Namun, karena teknik *cut-down* menghilangkan akses IV di masa depan, itu harus menjadi pilihan terakhir untuk akses.

(4) Disability

Semua anak perlu dinilai untuk perubahan tingkat kesadaran dan status neurologis, Hipoglikemia dan hipoksia sering muncul sebagai agitasi dan kebingungan pada anak. Penting untuk mengidentifikasi dan mengobati penyebab perubahan status mental. Berubahnya status mental memungkinkan memiliki beberapa penyebab dan tidak boleh dianggap hanya cedera luka bakar.

(5) Exposure

Survey primer luka bakar harus mencakup berhentinya proses pembakaran, melepas semua pakaian, perhiasan, sepatu dan kaus kaki untuk memeriksa seluruh tubuh dan menentukan tingkat luka bakar. Anak juga harus diperiksa untuk menilai cedera terkait atau yang sudah ada sebelumnya. Kemudian, tutupi pasien dengan seprai bersih dan kering. Pembalut antimikroba topikal tidak diindikasikan sebelum transfer. Selama perawatan dan pemindahan, langkah-langkah untuk menghemat panas tubuh, termasuk selimut, sangat penting untuk korban. Karena luas permukaan anak kecil yang besar, kepala harus tertutup untuk menjaga suhu tubuh selama perawatan dan transportasi anak-anak dengan luka bakar TBSA besar.

2) Survey Skunder

Survei sekunder tidak dimulai sampai survei primer selesai dan setelah upaya resusitasi dilakukan mapan. Survei sekunder terutama memerlukan riwayat lengkap dan pemeriksaan fisik, yang meliputi: penentuan yang tepat dari persen TBSA yang terbakar.

Bagian penting yang termasuk survey skunder adalah :

- (1) Keadaan cedera dan pertolongan pertama yang diberikan
- (2) Evaluasi lengkap dari kepala hingga kaki pasien
- (3) Penentuan persentase TBSA yang terbakar
- (4) Pengukuran rule of nines
- (5) Lab dan rontgen
- (6) Pemantauan resusitasi cairan

- (7) Manajemen nyeri dan kecemasan
- (8) Dukungan psikososial
- (9) Perawatan Luka
- (10) Paparan penyakit menular perlu diperhatikan. Penyakit menular seperti cacar air dapat mempersulit pemulihan dan menimbulkan bahaya bagi pasien lain dan penyedia layanan kesehatan.

2.2 Konsep Pengetahuan

2.2.1 Pengertian Pengetahuan

Pengetahuan merupakan hasil dari tahu, dan ini terjadi setelah orang melakukan penginderaan terhadap suatu obyek tertentu. Penginderaan terjadi melalui pancaindra manusia, yakni indra penglihatan, pendengaran, penciuman, rasa, dan raba. Sebagian besar pengetahuan manusia diperoleh melalui mata dan telinga (Notoatmodjo, 2014). Menurut (Suriasumantri dalam Nurroh, 2017) Definisi Pengetahuan adalah suatu hasil yang di mengerti dari manusia atas penggabungan atau kerjasama antara suatu subyek yang mengetahui dan objek yang diketahui. Mengenai apa yang diketahui tentang sesuatu objek tertentu.

2.2.2 Cara untuk Memperoleh Pengetahuan

Sedangkan (Notoatmodjo, 2014) membagi ke dalam 2 bagian besar cara untuk meperoleh pengetahuan yaitu:

1. Cara Non Ilmiah atau Tradisional

Cara yang biasa dilakukan oleh manusia saat sebelum ditemukan cara dengan metode ilmiah. Cara ini dilakukan oleh manusia pada zaman dulu kala dalam rangka memecahkan masalah termasuk dalam menemukan teori atau pengetahuan baru. Cara-cara tersebut yaitu melalui: cara coba salah (trial and error), secara kebetulan, cara kekuasaan atau otoritas, pengalaman pribadi, cara akal sehat, kebenaran melalui wahyu, kebenaran secara intuitif, melalui jalan pikiran, induksi dan deduksi.

2. Cara Ilmiah atau Modern

Cara ilmiah ini dilakukan melalui cara-cara yang sistematis, logis dan ilmiah dalam bentuk metode penelitian. Penelitian dilaksanakan melalui uji coba terlebih dahulu sehingga instrumen yang digunakan valid dan reliabel dan hasil penelitiannya dapat digeneralisasikan pada populasi. Kebenaran atau pengetahuan yang diperoleh betul-betul dapat dipertanggungjawabkan karena telah melalui serangkaian proses yang ilmiah. Peneliti dalam melaksanakan penelitiannya harus menjunjung tinggi etika dan moral dan mengedepankan kejujuran. Hasil penelitian harus dilaporkan apa adanya, tidak boleh memutarbalikkan fakta penelitian agar sesuai keinginan atau merekayasa hasil uji statistik sesuai dengan keinginan atau kepentingan tertentu. Selain menjunjung etika dan moral, seorang peneliti harus memahami landasan ilmu, yaitu pondasi atau dasar tempat berpijaknya keilmuan. Tiga landasan ilmu filsafat tersebut merupakan masalah yang paling fundamental dalam kehidupan karena memberikan sebuah kerangka berpikir yang sangat sistematis. Ketiganya merupakan proses berpikir yang diawali dengan pembahasan “Apa itu pengetahuan?”, “Bagaimana mendapatkan pengetahuan?”, dan “Untuk apa pengetahuan tersebut dalam kehidupan sehari-hari?”. Pada dasarnya semua ilmu pengetahuan tidak terlepas dari tiga problem filosofis tersebut (ontologis, epistemologis dan aksiologis). Artinya semua ilmu pengetahuan pasti berbicara tentang apa yang menjadi objek kajiannya, bagaimana cara mengetahuinya dan apa manfaatnya buat kehidupan manusia. Oleh sebab itu, maka jelas bahwa

ilmu dan penelitian merupakan hal yang berkaitan untuk memperoleh suatu pengetahuan. Menurut (Notoatmodjo, 2014) bahwa pengetahuan adalah hasil tahu seseorang terhadap objek melalui indera yang dimilikinya. Pengetahuan tiap orang akan berbeda-beda tergantung dari bagaimana pengindraannya masing-masing terhadap objek atau sesuatu.

2.2.3 Tingkatan Pengetahuan

Secara garis besar terdapat 6 tingkatan pengetahuan (Notoatmodjo, 2014), yaitu:

1. Tahu (*Know*)

Pengetahuan yang dimiliki baru sebatas berupa mengingat kembali apa yang telah dipelajari sebelumnya, sehingga tingkatan pengetahuan pada tahap ini merupakan tingkatan yang paling rendah. Kemampuan pengetahuan pada tingkatan ini adalah seperti menguraikan, menyebutkan, mendefinisikan, menyatakan. Contoh tahapan ini antara lain: menyebutkan definisi pengetahuan, menyebutkan definisi rekam medis, atau menguraikan tanda dan gejala suatu penyakit.

2. Memahami (*Comprehension*)

Pengetahuan yang dimiliki pada tahap ini dapat diartikan sebagai suatu kemampuan menjelaskan tentang objek atau sesuatu dengan benar. Seseorang yang telah faham tentang pelajaran atau materi yang telah diberikan dapat menjelaskan, menyimpulkan, dan menginterpretasikan objek atau sesuatu yang telah dipelajarinya tersebut. Contohnya dapat menjelaskan tentang pentingnya dokumen rekam medis.

3. Aplikasi (*Application*)

Pengetahuan yang dimiliki pada tahap ini yaitu dapat mengaplikasikan atau menerapkan materi yang telah dipelajarinya pada situasi kondisi nyata atau sebenarnya. Misalnya melakukan assembling (merakit) dokumen rekam medis atau melakukan kegiatan pelayanan pendaftaran.

4. Analisis (*Analysis*)

Kemampuan menjabarkan materi atau suatu objek ke dalam komponen-komponen yang ada kaitannya satu sama lain. Kemampuan analisis yang dimiliki seperti dapat menggambarkan (membuat bagan), memisahkan dan mengelompokkan, membedakan atau membandingkan. Contoh tahap ini adalah menganalisis dan membandingkan kelengkapan dokumen rekam medis menurut metode Huffman dan metode Hatta.

5. Sintesis (*Synthesis*)

Pengetahuan yang dimiliki adalah kemampuan seseorang dalam mengaitkan berbagai elemen atau unsur pengetahuan yang ada menjadi suatu pola baru yang lebih menyeluruh. Kemampuan sintesis ini seperti menyusun, merencanakan, mengkategorikan, mendesain, dan menciptakan. Contohnya membuat desain form rekam medis dan menyusun alur rawat jalan atau rawat inap.

6. Evaluasi (*Evaluation*)

Pengetahuan yang dimiliki pada tahap ini berupa kemampuan untuk melakukan justifikasi atau penilaian terhadap suatu materi atau objek. Evaluasi dapat digambarkan sebagai proses merencanakan, memperoleh,

dan menyediakan informasi yang sangat diperlukan untuk membuat alternatif keputusan. Tahapan pengetahuan tersebut menggambarkan tingkatan pengetahuan yang dimiliki seseorang setelah melalui berbagai proses seperti mencari, bertanya, mempelajari atau berdasarkan pengalaman.

2.2.4 Faktor – Faktor Yang Mempengaruhi Pengetahuan

Menurut (Notoatmodjo, 2014) faktor yang mempengaruhi pengetahuan antara lain yaitu:

1. Faktor Pendidikan

Semakin tinggi tingkat pengetahuan seseorang, maka akan semakin mudah Universitas Sumatera Utara 9 untuk menerima informasi tentang obyek atau yang berkaitan dengan pengetahuan. Pengetahuan umumnya dapat diperoleh dari informasi yang disampaikan oleh orang tua, guru, dan media masa.

2. Faktor Pekerjaan

Pekerjaan seseorang sangat berpengaruh terhadap proses mengakses informasi yang dibutuhkan terhadap suatu obyek.

3. Faktor Pengalaman

Pengalaman seseorang sangat mempengaruhi pengetahuan, semakin banyak pengalaman seseorang tentang suatu hal, maka akan semakin bertambah pula pengetahuan seseorang akan hal tersebut. Pengukuran pengetahuan dapat dilakukan dengan wawancara atau angket yang menyatakan tentang isi materi yang ingin diukur dari subjek penelitian atau responden.

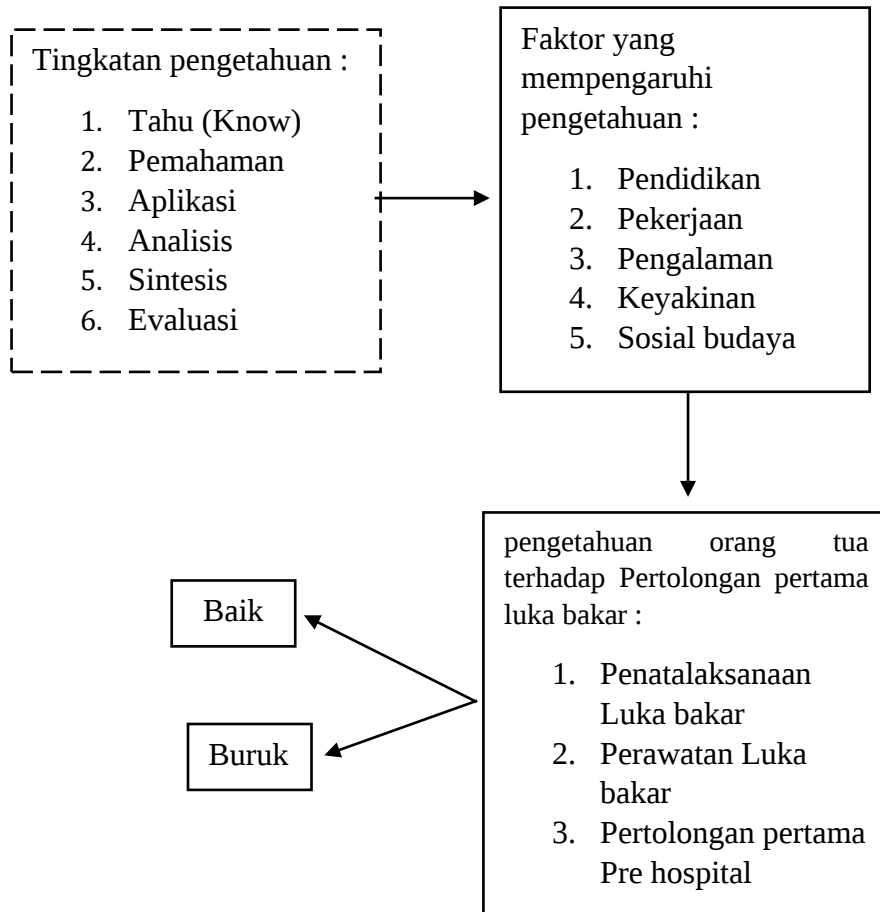
4. Keyakinan

Keyakinan yang diperoleh oleh seseorang biasanya bisa didapat secara turun-temurun dan tidak dapat dibuktikan terlebih dahulu, keyakinan positif dan keyakinan negatif dapat mempengaruhi pengetahuan seseorang.

5. Sosial Budaya

Kebudayaan beserta kebiasaan dalam keluarga dapat mempengaruhi pengetahuan, persepsi, dan sikap seseorang terhadap sesuatu.

2.3 Kerangka Konseptual Penelitian



Keterangan :

— : diteliti

- - - - : tidak diteliti

BAB 3

METODE PENELITIAN

3.1 Strategi Pencarian Literature

3.1.1 Protokol dan Registrasi

Protokol dan evaluasi dari *Literature Review* ini akan menggunakan diagram PRISMA yang mana digunakan untuk menentukan pemilihan studi yang telah ditemukan dan disesuaikan dengan tujuan dari *literature review*. Penelitian ini merupakan rangkuman menyeluruh dalam bentuk *literature review* mengenai Pengetahuan Orang tua tentang Pertolongan Pertama Luka Bakar pada Anak.

3.1.2 Database Pencarian

Data yang digunakan dalam penelitian ini merupakan data sekunder yang diperoleh bukan dari pengamatan langsung tetapi dari peneliti-peneliti terdahulu. Sumber yang digunakan berupa jurnal jurnal internasional yang berhubungan dengan topik. Pencarian literature ini menggunakan empat database yaitu: *Science Direct*, *Proquest*, *Pubmed* dan *Google Scholar*. Hasil pengumpulan data literature selanjutnya dilakukan pencarian dimulai dengan kata kunci dalam *literature review*: “*First aid burns of children* ”and“ *Knowledge level of parents*” dengan rentang tahun 2017-2021.

3.1.3 Kata kunci

Pencarian artikel atau jurnal menggunakan kata kunci dan Boolean operator (AND, OR NOT or AND NOT) yang digunakan untuk memperluas dan menspesifikasikan hasil pencarian, sehingga bisa mempermudah dalam menentukan jurnal atau artikel yang digunakan.

Tabel 3.1 Kata Kunci

Pengetahuan Orang tua	Pertolongan pertama luka bakar pada anak
Pengetahuan Orang tua	Pertolongan pertama luka bakar pada anak
<i>OR</i>	<i>OR</i>
<i>Knowledge Parents</i>	<i>First aid burns of children</i>

3.2 Kriteria Inklusi dan Eksklusi

Strategi yang digunakan dalam pencarian artikel menggunakan PICOS framwok yaitu terdiri dari:

1. Population/problem merupakan populasi atau masalah yang akan dianalisis sesuai dengan tema yang sudah ditentukan dalam literature *review*.
2. Intervension/instrumen merupakan tindakan penatalaksanaan terhadap kasus baik individu atau kelompok masyarakat serta pemaparan tentang penatalaksanaan studi sesuai dengan tema yang sudah ditentukan dalam literature *review*.
3. Comparation merupakan penatalaksanaan atau intervensi lainnya yang digunakan sebagai pembanding, namun jika tidak ada bisa menggunakan kelompok control pada artikel yang dipakai.
4. Outcome merupakan hasil atau luaran yang diperoleh pada studi terdahulu yang sesuai dengan tema yang sudah ditentukan dalam literature *review*.
5. Study design merupakan desain penelitian yang digunakan dalam artikel-artikel yang akan direview.

Table 3.2 kriteria Inklusi dan eksklusi

Kriteria	Inklusi
<i>Population</i>	Populasi dalam penelitian ini adalah orang tua yang memiliki anak.
<i>Instrumen</i>	Instrumen yang digunakan adalah kuesioner pengetahuan yang fokus pada pertolongan pertama luka bakar
<i>Comparison</i>	Tidak ada faktor pembanding
<i>Outcome</i>	Mendapatkan gambaran pengetahuan yang memiliki anak yang terkait dengan pertolongan pertama luka bakar
<i>Study Design and Publication Type</i>	<i>Systematic review</i>
<i>Publication Years</i>	Artikel jurnal yang terbit pada tahun 2017-2021
<i>Languange</i>	Bahasa Inggris

3.3 Seleksi Studi dan Penilaian Kualitas

Hasil Pencarian dan Seleksi Studi

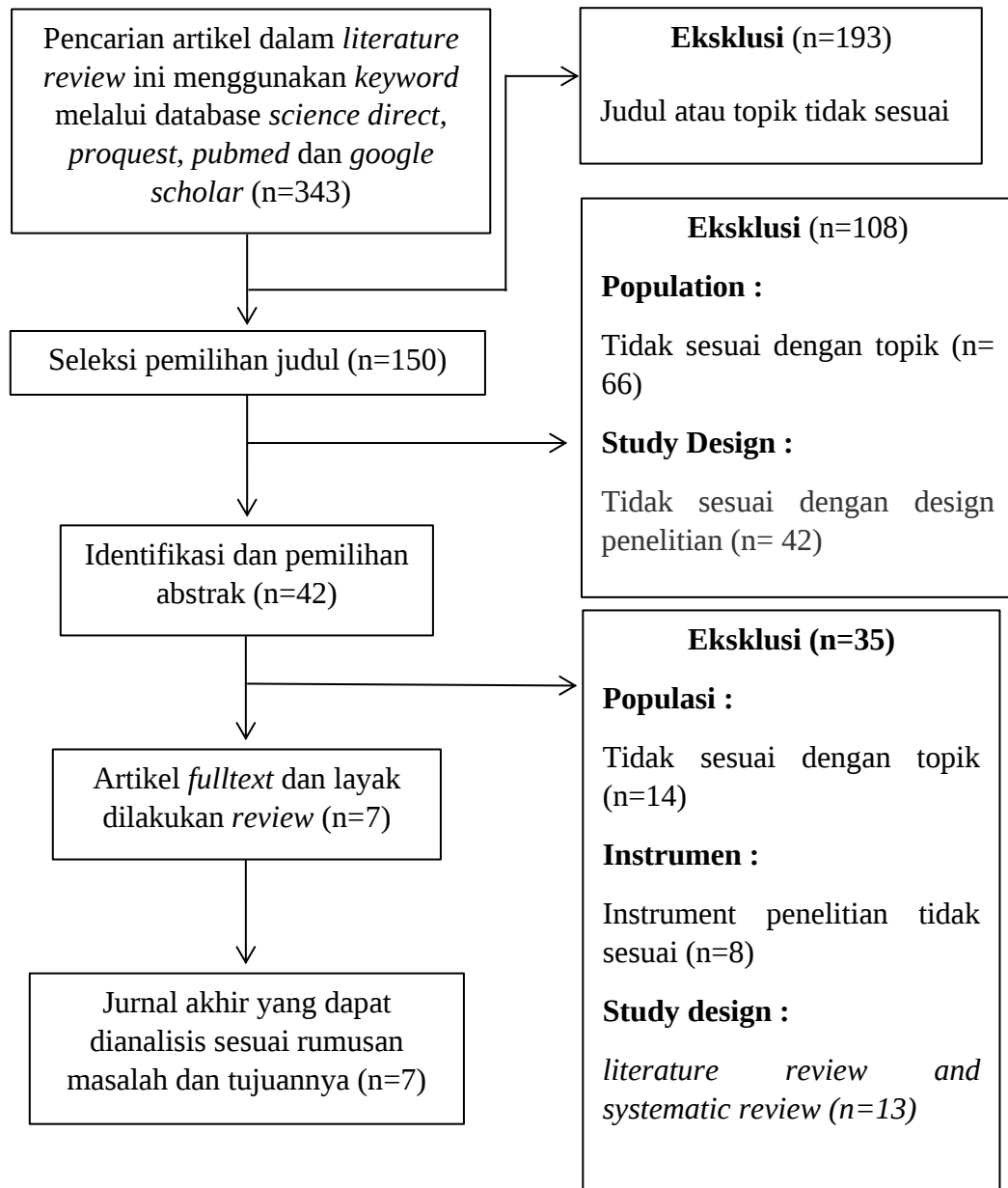


Diagram *flow literature review* berdasarkan PRISMA

BAB 4

HASIL DAN KARAKTERISTIK

4.1 Hasil

Pada bab ini disampaikan hasil dan analisis *litelatur review* “Pengetahuan Orang tua tentang Pertolongan Pertama Luka Bakar pada Anak” yang meliputi data umum dan data khusus sebagai berikut :

4.1.1 Data umum

Pada data umum disampaikan karakteristik studi, karakteristik responden dan jenis pertolongan pertama pada luka bakar yang meliputi tujuh artikel yang di *review* :

1. Karakteristik Studi

Tabel 4.1 hasil penelusuran tujuh artikel yang di *review* yang meliputi tahun terbit, desain, hasil, kesimpulan dan *database*.

	Penulis dan tahun terbit	Judul	Metode Penelitian (Desain, Populasi, Sample, Variable, Instrumen, Analisis Data)	Hasil penelitian	Kesimpulan	Data base
Jurnal 1	Mohd Fuad <i>et al</i> (2020)	Pengetahuan dan praktik pertolongan	Desain Penelitian Cross Sectional	Dari 80 responden, 46,3% menunjukkan pengetahuan minimal tentang pertolongan	Temuan menunjukkan bahwa tingkat pengetahuan pertolongan pertama luka bakar masih terbatas.	Science Direct

	Penulis dan tahun terbit	Judul	Metode Penelitian (Desain, Populasi, Sample, Variable, Instrumen, Analisis Data)	Hasil penelitian	Kesimpulan	Data base
		pertama luka bakar antara orang tua dari anak di bawah umur	Sampel 80 Responden Variabel Pengetahuan dan praktik pertolongan pertama luka bakar dan orang tua anak dibawah umur Instrumen Kuisisioner Analisis data Uji Chi Square	pertama luka bakar, 47,5% memiliki pengetahuan sedang, dan 6,3% pengetahuan luas. Ada hubungan yang signifikan antara data demografi dengan pengetahuan pertolongan pertama luka bakar berdasarkan jenis kelamin ($P = 0,02$), tetapi tidak ada hubungan yang signifikan antara tingkat pengetahuan dan tingkat pendidikan ($P = 0,29$) atau usia ($P = 0,09$).	Pendidikan bagi orang tua dari anak-anak di bawah umur, termasuk demonstrasi pertolongan pertama luka bakar, diperlukan untuk mempromosikan tindakan yang aman dan mencegah cedera lebih lanjut di masyarakat	
Jurnal 2	Wafaa Jubran <i>et al</i> (2021)	Pengetahuan dan praktik tentang pertolongan pertama pada luka bakar pada anak di	Desain Penelitian Cross Sectional Sampel 764 Responden	Sekitar sepertiga dari 764 responden tidak mengetahui derajat luka bakar yang disertai lepuh berisi cairan dan derajat yang disertai kulit kering, hangus dan meradang. Lebih dari separuh responden memiliki	Meskipun tingkat pengetahuan orang tua terhadap pertolongan pertama luka bakar pada anak masih rendah, orang tua menunjukkan praktik yang baik terhadap topik yang diteliti. Studi serupa disarankan di daerah lain di	Pro Quest

	Penulis dan tahun terbit	Judul	Metode Penelitian (Desain, Populasi, Sample, Variable, Instrumen, Analisis Data)	Hasil penelitian	Kesimpulan	Data base
		kalangan orang tua di Abha dan Khamis Mushait , Arab Saudi	Variabel Pengetahuan dan praktik tentang pertolongan pertama pada luka bakar dan kalangan orang tua di abha arab Saudi Instrumen Kuisisioner Analisis data Uji Chi Square	praktik yang baik terhadap pertolongan pertama untuk luka bakar pada anak	Arab Saudi.	
Jurnal 3	Abdulrahman <i>et al</i> (2017)	Sifat, Pengetahuan dan praktik Ibu tentang luka bakar di kota Sulaimani	Desain Penelitian Cross Sectional Sampel 123 Responden Variabel Sifat, Pengetahuan dan praktik Ibu	Hasil penelitian mempunyai skor pengetahuan yang buruk, sedang, dan baik tentang luka bakar dan infeksi luka bakar masing-masing 79,37%, 18,25%, dan 2,38%. Untuk praktik terkait ibu, ada 66,67% dalam level praktik buruk,	menunjukkan bahwa pengetahuan dan praktik ibu di kota Sulaimani terkait luka bakar dan infeksi pada anaknya masih rendah dan dinas kesehatan setempat harus memasukkan pendidikan kesehatan kepada orang tua khususnya ibu dalam pencegahan luka bakar pada	Google Scholar

	Penulis dan tahun terbit	Judul	Metode Penelitian (Desain, Populasi, Sample, Variable, Instrumen, Analisis Data)	Hasil penelitian	Kesimpulan	Data base
			tentang luka bakar di kota Sulaimani Instrumen Kuisisioner Analisis data Chi Square	30,95% level sedang, dan 2,38% level praktik baik.	anak di rumah yang melibatkan panas. cairan dan api juga berbahaya domestik lainnya serta kegiatan penting setelah luka bakar atau masuk rumah sakit.	
Jurnal 4	Hatan Mortada <i>et al</i> (2020)	Pengetahun, sikap, dan praktik Orang tua tentang pertolongan pertama luka bakar dan pencegahan luka bakar anak di Jeddah, Arab Saudi	Desain Penelitian Cross Sectional Sampel 489 Responden Variabel Pengetahun, sikap, dan praktik Orang tua tentang pertolongan pertama luka bakar dan pencegahan luka bakar anak	Penelitian ini melibatkan 469 responden (tingkat respon 93,2%). Dari semua cedera dan masalah kesehatan utama, luka bakar adalah salah satu yang paling menyedihkan dan menempati urutan keempat penyebab trauma paling umum secara global, setelah kecelakaan kendaraan bermotor, jatuh, dan kekerasan [1-3]. Luka bakar didefinisikan sebagai cedera pada kulit Rerata usia responden	Hasil penelitian menunjukkan bahwa pengetahuan dan sikap orang tua terhadap pertolongan pertama pembakaran dan pencegahannya di Arab Saudi tidak memadai dan penyedia layanan kesehatan harus menjelaskan kekurangan dan mulai menyebarkan pengetahuan dan mendidik masyarakat	Google Scholar

	Penulis dan tahun terbit	Judul	Metode Penelitian (Desain, Populasi, Sample, Variable, Instrumen, Analisis Data)	Hasil penelitian	Kesimpulan	Data base
			Instrumen Kuisisioner Analisis data Uji Chi Square	adalah 35,25 ($\pm 12,52$) tahun; setengah dari responden (50,5%) memiliki gelar sarjana. Ketika ditanya pertanyaan terkait luka bakar, 29,0% menggunakan pengobatan tradisional untuk mengobati luka bakar; dan 64,8% setuju untuk menggunakan air setelah luka bakar. Skor rata-rata pengetahuan secara keseluruhan adalah 5,77, SD $\pm 1,44$ dan berkisar antara 1 dan 10		
Jurnal 5	Erika J <i>et al</i> (2017)	Asesmen Pengetahuan Orang tua tentang Pemberian Pertolongan Pertama Pada	Desain Penelitian Cross Sectional Sampel 243 Responden Variabel Asesmen	Hasilnya disajikan pada 105 anak laki-laki (45,3%) dan 127 anak perempuan (54,7%) yang orang tuanya memberikan informasi untuk penelitian ini; 68 anak (29,3%) mengalami luka bakar. Anak laki-laki	Kesimpulan. Orang tua yang lebih muda, tinggal di kota, berpendidikan tinggi dan sudah menikah memiliki pengetahuan pertolongan pertama yang lebih baik terkait luka bakar pada anak. Penilaian sendiri pengetahuan	Google Scholar

	Penulis dan tahun terbit	Judul	Metode Penelitian (Desain, Populasi, Sample, Variable, Instrumen, Analisis Data)	Hasil penelitian	Kesimpulan	Data base
		Anak Pasca Luka Bakar Termal	Pengetahuan Orang tua dan Pemberian Pertolongan Pertama Pada Anak Pasca Luka Bakar Termal Instrumen Kuisisioner Analisis data Uji Chi Square	menderita luka bakar secara signifikan lebih sering daripada anak perempuan (53,3% dan 9,4%, masing-masing, $P < 0,001$). Pada 85% kasus, minuman panas adalah penyebab utama luka bakar pada anak-anak. Hasil penelitian menunjukkan bahwa 55 anak (80,9%) diberikan pertolongan pertama dalam 5 menit pertama setelah luka bakar dan orang tua adalah mereka yang paling sering (85,3%) memberikan pertolongan pertama kepada anak-anak mereka. Pengalaman luka bakar termal pada anak-anak dikaitkan dengan karakteristik sosio-demografis orang tua mereka.	tentang pertolongan pertama pada luka bakar lebih tinggi pada orang tua yang anaknya tidak pernah mengalami luka bakar. Penting untuk mengajari orang tua/wali bagaimana memberikan pertolongan pertama yang tepat waktu dan tepat jika terjadi luka bakar termal pada anak	

	Penulis dan tahun terbit	Judul	Metode Penelitian (Desain, Populasi, Sample, Variable, Instrumen, Analisis Data)	Hasil penelitian	Kesimpulan	Data base
Jurnal 6	Tajinder Kaur (2019)	Kajian untuk Menilai Pengetahuan Ibu Tentang Luka Bakar dibawah 5 tahun dan Pencegahan di Daerah Pedesaan Terpilih	Desain Penelitian Deskriptif Sampel 60 Responden Variabel Pengetahuan Ibu Tentang Luka Bakar dibawah 5 tahun dan Pencegahan di Daerah Pedesaan Terpilih Instrumen Kuisisioner Analisis data Uji Chi Square	Skor pengetahuan ibu balita tentang luka bakar dan pencegahannya secara keseluruhan didapatkan bahwa sekitar 38,3% ibu memiliki pengetahuan sedang tentang luka bakar dan pencegahannya dan sekitar 16,7% ibu memiliki pengetahuan yang kurang dan 45% ibu memiliki pengetahuan yang kurang. .	Dalam penelitian ini 80% luka bakar terjadi di rumah anak itu sendiri. Sangat penting untuk memperhatikan keselamatan dan keamanan anak-anak di rumah. Hal ini akan mendorong perkembangan psikososial anak yang sehat. Keselamatan dan keamanan dapat dijamin dengan menyediakan lingkungan fisik yang bersih, aman dan nyaman.	Pubmed

	Penulis dan tahun terbit	Judul	Metode Penelitian (Desain, Populasi, Sample, Variable, Instrumen, Analisis Data)	Hasil penelitian	Kesimpulan	Data base
Jurnal 7	Jacqueline D et al (2018)	Pengetahuan tentang resiko luka bakar pada masa kanak-kanak dan pertolongan pertama luka bakar : cool runnnings	Desain Penelitian <i>randomised controlled trial (RCT) but represent a cross-sectional</i> Sampel 498 Responden Variabel Pengetahuan tentang resiko luka bakar pada masa kanak-kanak dan pertolongan pertama luka bakar : cool runnnings Instrumen Kuisisioner Analisis data Uji Chi Square	498 peserta dari seluruh Queensland menyelesaikan kuesioner awal. Sumber informasi pertolongan pertama luka bakar yang paling umum adalah internet (79%). Sepertiga (33%) dengan benar mengidentifikasi luka bakar akibat minuman panas sebagai penyebab utama luka bakar pada masa kanak-kanak, 43% mengetahui kelompok usia yang paling berisiko. Sementara 94% melaporkan bahwa mereka akan mendinginkan luka bakar dengan air, hanya 10% yang melaporkan durasi 20 menit yang direkomendasikan.	Dalam penelitian ini, ibu dari anak kecil sebagian besar tidak menyadari seberapa sering luka bakar minuman panas terjadi dan kelompok usia yang paling rentan terhadapnya. Pengetahuan pertolongan pertama luka bakar yang tidak memadai lazim terjadi pada ibu dari anak kecil; ada kebutuhan mendesak dan mendesak untuk meningkatkan pengetahuan pertolongan pertama luka bakar dalam kelompok ini. Mengingat tingginya insiden luka bakar minuman panas pada anak usia 6-24 bulan, penting untuk menargetkan kampanye pencegahan luka bakar/pertolongan pertama di masa depan pada orang tua dari anak kecil.	Pubmed

Berdasarkan tabel 4.1. hasil analisis artikel yang dilakukan secara keseluruhan, para peneliti membahas terkait “Pengetahuan Orang tua tentang Pertolongan Pertama Luka Bakar pada Anak”, dari tujuh artikel yang telah di *review* digunakan berada pada rentang 2017-2021 dan berjenis kuantitatif, Hasil *review* dari tujuh artikel berjumlah enam menggunakan study design *Cross Sectional* dan satu menggunakan design *deskriptif* , dari tujuh artikel di temukan melalui empat *database* yaitu *Science direct, Pubmed, Pro Quest and Google Scholar*, keseluruhan artikel menggambarkan pengetahuan orang tua tentang pertolongan pertama luka bakar pada anak. hal ini dikuatkan dengan adanya hasil deskripsi tentang pengetahuan orang tua tentang pertolongan pertama luka bakar pada anak

2. Karakteristik responden

Pada karakteristik responden disampaikan karakteristik : Usia, status pendidikan, jenis kelamin, jenis pekerjaan, sebagaimana pada tabel 4.2 sampai dengan 4.5 sebagai berikut :

a. Usia responden

Tabel 4.2 Distribusi Frekuensi dan presentase responden berdasarkan Usia pada 7 artikel yang di review

No	Penulis dan Tahun Terbit	Usia Responden (Tahun)	Jumlah	Persentase (%)
1	Mohd Fuad Halil <i>et al</i> (2020)	21-30	7	10%
		31-40	23	29%
		41-50	38	47%
		Lebih dari 51	12	15%
2	Wafaa Jubran Hassan Alatreez <i>et al</i> (2021)	20-30	247	32,3%
		31-40	296	38,7%
		41-50	156	20,4%
		51-60	47	6,2%
		61-7-	16	2,1%
		Lebih dari 70	2	0,3%
3	Abdulrahman M. Ibrahim <i>et al</i> (2017)	Kurang dari 25	51	40,5%
		25-30	27	21,4%
		Lebih dari 30	48	38,1%
4	Hatan Mortada <i>et al</i> (2020)	Usia ($\pm 12,52$) tahun	rata-rata 35,25	
5	Tajinder Kaur (2019)	18-25	14	23,3%
		26-30	30	50%
		31-51	16	26,7%
6	Erika Juškauskien <i>et al</i> (2017)	Kurang dari 30	128	(55.2)%
		Lebih dari 30	104	(44.8)%

No	Penulis dan Tahun Terbit	Usia Responden (Tahun)	Jumlah	Persentase (%)
7	Jacqueline D Burgess <i>et al</i> (2018)	18-24	89	18%
		25-29	179	35%
		30-34	161	32%
		35-39	62	12%
		40 dst	10	2%

Sumber: Data Sekunder

Pada tabel 4.2 hasil analisis pada 7 artikel yang *direview* mencantumkan rata-rata usia dengan jumlah terbanyak pada usia >25 tahun sampai usia 40.

b. Status Pendidikan

Tabel 4.3 Distribusi Frekuensi dan presentase responden berdasarkan status pendidikan pada tujuh artikel yang di *review*

No	Penulis dan Tahun Terbit	Status pendidikan	Jumlah	Persentase (%)
1	Mohd Fuad Halil <i>et al</i> (2020)	Sekolah dasar	4	5%
		SMP	51	64%
		SMA	25	31%
2	Wafaa Jubran Hassan Alatreez <i>et al</i> (2021)	Buta huruf	9	1,2%
		Sekolah dasar	16	2,1%
		SMP	154	20,2%
		SMA	27	3,5%
		sarjana	496	64,9%
		pascasarjana	62	8,1%
3	Abdulrahman M. Ibrahim <i>et al</i> (2017)	Butuh Huruf	70	55,6%
		SMA	34	27,0%
		Sarjana	22	17,5%
4	Hatan Mortada <i>et al</i> (2020)	Menengah	122	26%
		Sarjana	237	50,5%
		Pendidikan lebih tinggi	47	10,0%

No	Penulis dan Tahun Terbit		Status pendidikan	Jumlah	Persentase (%)
			Menolak untuk menjawab	63	13,4%
5	Tajinder Kaur (2019)		<i>Primary</i>	2	3,3%
			<i>Middle school</i>	27	45%
			<i>High school</i>	21	35%
			<i>PUC</i>	10	16,7%
6	Erika Juškauskien et al (2017)		SMP	82	35.3%
			SMA	65	28.1%
			Sarjana	85	36,6%
7	Jacqueline D Burgess et al (2018)		SD	86	17%
			SMP-SMA	131	26%
			Diploma	127	26%
			Sarjana	112	23%
			Pascasarjana	42	8%

Sumber : data sekunder

Pada tabel 4.3 hasil Analisa pada tujuh artikel yang *direview* mencantumkan status pendidikan terbanyak pada jenjang SMP-SMA, selebihnya status pendidikan Buta huruf, Pendidikan SD, dan diikuti dengan Sarjana dan Pascasarjana.

c. Jenis Kelamin Responden

Tabel 4.4 Distribusi Frekuensi dan presentase responden berdasarkan jenis kelamin pada tujuh artikel yang di review

No	Penulis dan Tahun Terbit	Jenis Kelamin	Jumlah	Persentase (%)
1	Mohd Fuad Halil <i>et al</i> (2020)	Laki- laki	26	32%
		Perempuan	54	68%
2	Wafaa Jubran Hassan Alatreez <i>et al</i> (2021)	Laki- laki	333	43,6%
		Perempuan	431	56,4%
3	Abdulrahman M. Ibrahim <i>et al</i> (2017)	Perempuan	126	100%
4	Hatan Mortada <i>et al</i> (2020)	Laki- laki	142	30.3%
		Perempuan	310	66.1%
		Menolak untuk menjawab	15	3.2%
5	Tajinder Kaur (2019)	Laki-laki dan perempuan	60	
6	Erika Juškauskien <i>et al</i> (2017)	Laki-laki dan perempuan	243	
7	Jacqueline D Burgess <i>et al</i> (2018)	Laki-laki dan perempuan	498	

Pada tabel 4.4 hasil Analisa dari tujuh artikel yang *direview* mencantumkan jenis kelamin terbanyak terdapat pada perempuan. dan 3 artikel lainnya tidak menjelaskan jumlah kelamin laki laki maupun perempuan

d. Jenis Pekerjaan

Pada tabel 4.5 Distribusi Frekuensi dan Presentase responden berdasarkan jenis pekerjaan pada orang tua pada tujuh artikel yang di *review*

No	Penulis dan Tahun Terbit	Jenis Pekerjaan	Jumlah	Persentase (%)
1	Mohd Fuad Halil <i>et al</i> (2020)	pegawai pemerintah	20	25%
		Perusahaan swasta	14	18%
		Wiraswasta	46	57%
2	Wafaa Jubran Hassan Alatreez <i>et al</i> (2021)	Tidak mencantumkan jenis pekerjaan		
3	Abdulrahman M. Ibrahim <i>et al</i> (2017)	Ibu rumah tangga	116	92,1%
		Staf pemerintah	7	5,6%
		Guru	3	2,3%
4	Hatan Mortada <i>et al</i> (2020)	Tidak mencantumkan jenis pekerjaan		
5	Tajinder Kaur (2019)	Tidak mencantumkan jenis pekerjaan		
6	Erika Juškauskien <i>et al</i> (2017)	Pensiunan	156	67,3
		Buruh	61	26,3
		Pengangguran	14	6,0
		Pelajar	1	0,4
7	Jacqueline D Burgess <i>et al</i> (2018)	Tidak mencantumkan jenis pekerjaan		

Pada tabel 4.5 hasil analisis dari tujuh artikel yang di *review* berdasarkan karakteristik status pekerjaan hasilnya bervariasi.

3. Jenis Pertolongan Pertama Luka Bakar

Tabel 4.6 Distribusi Frekuensi dan Presentase berdasarkan jenis pertolongan pertama luka bakar pada anak

No	Penulis dan Tahun Terbit	Jenis Pertolongan Pertama	Jumlah	Persentase (%)
1	Mohd Fuad Halil <i>et al</i> (2020)	Air biasa	21	26
		Kecap	20	25
		Telur	9	11
		Pasta gigi	8	10
		Mentega	8	10
		Es	6	8
		Air dingin	5	6
		Tepung terigu	3	4
2	Wafaa Jubran Hassan Alatreez <i>et al</i> (2021)	Air dingin	441	57,7%
		Es	242	31,7%
		Lepas pakaian	629	82,3%
		Salep antibiotic	587	76,8%
		Mentega	239	31,3%
		Kain bersih	537	70,3%
		Fevadol	344	45,0%
		Ibuprofen	217	28,4%
		Pergi ke dokter	715	93,6%
3	Abdulrahman M. Ibrahim <i>et al</i> (2017)	Menutup luka		23,0%
		Dirujuk ke RS		77,0%
		Dibawa ke puskesmas		55,6%
4	Hatan Mortada <i>et al</i> (2020)	Pengobatan tradisional		29%
		Tidak memakai P3K		67,2%
		Menutupi dengan		

No	Penulis dan Tahun Terbit	Jenis Pertolongan Pertama	Jumlah	Persentase (%)
		kain		64,8%
		Di siram dengan air		67,2%
5	Tajinder Kaur (2019)	Tidak mencantumkan kategori jenis pertolongan pertama		
6	Erika Juškauskien <i>et al</i> (2017)	Dibantu orang tua		85,3%
		Dibantu tetangga		4,4%
		Paramedis		10,3%
7	Jacqueline Burgess <i>et al</i> (2018)	D Air dingin		94%
		Melepas pakaian		2%

Pada tabel 4.6 hasil analisis pada tujuh artikel yang di *review* berdasarkan jenis pertolongan hasilnya adalah dengan menyiram luka dengan air dingin dan sisanya adalah jenis pertolongan dengan menutup luka, melepaskan pakaian, memberikan salep dan di rujuk ke pelayanan kesehatan.

4.1.2 Data khusus

Pada data khusus yang merupakan variable yang di review disampaikan data pengetahuan responden tentang pertolongan pertama luka bakar pada anak pada tujuh artikel yang di review sebagai berikut :

1. Pengetahuan Respoden

Tabel 4.7 Distribusi frekuensi dan presentase pengetahuan responden tentang pertolongan pertama luka bakar pada anak pada tujuh artikel yang telah di review

No	Penulis dan Tahun Terbit	Kategori	Persentase (%)
1	Mohd Fuad Halil <i>et al</i> (2020)	Pengetahuan Rendah	46,3%
		Pengetahuan Sedang	47,5%
		Pengetahuan Tinggi	6,2 %
2	Erika Juškauskien <i>et al</i> (2017)	Pengetahuan Sangat lemah	32,8%
		Pengetahuan Lemah	12,1%
		Pengetahuan Memuaskan	22%
		Pengetahuan Cukup baik	15,9%
		Pengetahuan baik	6,9%
		Pengetahuan Sangat baik	2,2%
3	Wafaa Jubran Hassan Alatreez <i>et al</i> (2021)	Pengetahuan Tidak mengetahui	43,36%
		Pengetahuan Mengetahui	52%
		Pengetahuan Tidak menjawab	5%
4	Jacqueline D Burgess <i>et al</i> (2018)	Pengetahuan tidak memadai	47,5%
		Pengetahuan memadai	52,5%
5	Abdulrahman M. Ibrahim <i>et al</i> (2017)	Pengetahuan Buruk	79,39%
		Pengetahuan Sedang	18,25%
		Pengetahuan Baik	2,38%
6	Tajinder Kaur (2019)	Pengetahuan Sedang	38,3%
		Pengetahuan Kurang	16,7%

No	Penulis dan Tahun Terbit	Kategori	Persentase (%)
		Pengetahuan Sangat kurang	45%
7	Hatan Mortada <i>et al</i> (2020)	Pengetahuan Baik	73,3%
		Pengetahuan Tidak menjawab	26,7%

Berdasarkan tabel 4.7 dari tujuh artikel yang di *review* terdapat tiga artikel dengan pengetahuan mengetahui, memadai dan baik. Kemudian terdapat tiga artikel dengan kategori pengetahuan sangat kurang, sangat lemah dan buruk, dan artikel lainnya kategori sedang.

BAB 5

PEMBAHASAN

6.1 Pengetahuan Orang tua Tentang Pertolongan Pertama Luka Bakar Pada Anak

Berdasarkan hasil *review* tujuh artikel yang di analisis terdapat tiga artikel dengan pengetahuan mengetahui, memadai dan baik. Kemudian terdapat tiga artikel dengan kategori pengetahuan sangat kurang, sangat lemah dan buruk, dan artikel lainnya kategori sedang. Dari tujuh artikel yang di *review* tiga artikel menunjukkan rendahnya pengetahuan orang tua tentang pertolongan pertama luka bakar di sebabkan oleh beberapa karakteristik seperti tingkat pendidikan, jenis pekerjaan, serta jenis pertolongan yang di peroleh, sehingga masih banyak orang tua yang pengetahuannya rendah dalam melakukan pertolongan pertama luka bakar pada anak, orang tua juga perlu di dasari dengan pengetahuan yang cukup, dengan demikian orang tua mampu memahami dan mengetahui cara melakukan pertolongan pertama luka bakar pada anak. Hasil dari analisa artikel diketahui jenis pekerjaan pada hasil artikel mencamtukan jenis pekerjaan yang bervariasi. Serta tingkat pendidikan orang tua mencamtumkan pendidikan terbanyak pada jenjang SMP sampai dengan SMA.

Pengetahuan orang tua terkait dengan pertolongan pertama luka bakar pada anak sangat penting karena tindakan pertolongan pertama yang tepat dapat menurunkan terjadinya angka kecacatan dan mengurangi munculnya rasa nyeri pada anak bahkan dapat mengurangi morbiditas dan mortalitas akibat luka bakar (Davies, Maguire,

Okolie, Watkins, & Kemp, 2013; Kattan, Alshomer, Alhujayri, Addar, & Algerian, 2016). Penelitian ini sejalan dengan Riandita (dalam Cahyaningrum, 2018) yang menjelaskan bahwa pengetahuan rendah meningkatkan risiko tujuh kali lebih tinggi untuk melakukan pengelolaan luka bakar yang buruk.

Pengetahuan juga merupakan hasil dari tahu, dan ini terjadi setelah orang melakukan pengindraan terhadap suatu obyek tertentu. Pengindraan terjadi melalui pancaindra manusia, yakni indra penglihatan, pendengaran, penciuman, rasa, dan raba. Sebagian besar pengetahuan manusia diperoleh melalui mata dan telinga (Notoatmodjo, 2014). Penilaian pengetahuan orang tua mengungkapkan bahwa dua pertiga orang tua dalam penelitian kami akan segera mendinginkan kulit anak mereka yang terbakar dengan mengalirkan air dengan suhu ruangan serta memberikan pertolongan pertama dan ini adalah tindakan yang benar yang orang tua ketahui dengan baik. Hasil serupa dikonfirmasi dalam studi Graham, Bache dan lain-lain (2012) (Juškauskienė et al., 2017). Namun, penelitian kami mengungkapkan bahwa orang tua tidak memiliki pengetahuan teoretis bagaimana bertindak dalam berbagai situasi setelah seorang anak terbakar. Hanya sepertiga dari responden yang menunjukkan pengetahuan yang cukup tentang bagaimana bertindak dengan benar dalam tiga kasus yang diberikan (Juškauskienė et al., 2017).

Tindakan pertolongan pertama pada kasus luka bakar sangat penting dilakukan untuk mencegah luka berkembang menjadi lebih buruk. Luka bakar dapat terjadi dimana saja, kapan saja, dan kadang tidak terdapat tenaga medis di lokasi kejadian (Sari, 2015). Orang tua sering menjadi penolong pertama bagi

korban. Tindakan pertolongan pertama pun harus segera diberikan karena setiap semakin cepat pertolongan diberikan, tingkat kerusakan jaringan akibat luka bakar dapat diminimalisir (Cox dan Rode, 2016). Hal inilah yang membuat pengetahuan orang tua tentang pertolongan pertama luka bakar pada anak sangat berpengaruh terhadap angka kejadian dan tingkat keparahan luka bakar. pengetahuan orang tua yang tinggi tentang pertolongan pertama mampu menurunkan tingkat keparahan luka bakar pada anak. Namun banyak orang tua yang masih memiliki kebiasaan penanganan yang justru mampu memperparah kondisi luka.

Pendidikan juga merupakan sesuatu yang dapat membawa seseorang untuk memiliki ataupun meraih wawasan dan pengetahuan seluas-luasnya. Orang-orang yang memiliki pendidikan lebih tinggi akan memiliki wawasan dan pengetahuan yang lebih luas jika dibandingkan dengan orang-orang yang memiliki pendidikan yang lebih rendah (Notoatmodjo, 2003). Hasil penelitian ini sejalan dengan penelitian Hizni (2010) yang menyatakan bahwa orang tua yang memiliki pendidikan rendah beresiko memiliki anak dengan stunting lebih besar di bandingkan dengan orang tua berpendidikan tinggi (Hizni, Yulia, & Gamayanti, 2015). Hal ini mendukung hasil penelitian mengenai luka bakar lebih sering terjadi pada keluarga yang berpendidikan rendah (buta huruf) (Ibrahim et al., 2017). Temuan ini sesuai dengan studi Siaw, NA yang diperoleh bahwa tingkat pendidikan orang tua yang rendah merupakan risiko utama untuk luka bakar di antara anak-anak mereka, tetapi hasilnya tidak konsisten dengan Laursen, B. dan JW Nielsen yang melaporkan bahwa orang tua dengan tingkat pendidikan dasar lebih relevan untuk menyebabkan luka bakar pada anaknya. Selain itu, sebuah

studi oleh Tse, T., et al mengungkapkan bahwa sebagian besar orang tua yang memiliki anak dengan luka bakar menyelesaikan tingkat pendidikan menengah (Ibrahem et al., 2017).

Temuan penelitian lain menunjukkan bahwa orang tua dari anak di bawah umur memiliki pengetahuan yang rendah sampai sedang tentang pertolongan pertama luka bakar di rumah. Rendahnya pendidikan orang tua tentang bagaimana bereaksi terhadap luka bakar pada anak-anak mereka (Halil et al., 2021). Pengetahuan pertolongan pertama luka bakar penting dan sangat relevan untuk memenuhi kebutuhan hidup orang tua, orang tua harus dididik dalam pertolongan pertama luka bakar. Penting bahwa orang tua harus memahami konsep dan manajemen dasar pertolongan pertama harus ditekankan pada semua kasus luka bakar dan bagaimana memberikan bantuan darurat atau perawatan dini untuk memberikan bantuan kepada korban dan untuk mencoba mencegah cedera menjadi lebih parah atau kritis selama waktu yang diperlukan untuk mendapatkan perawatan dari klinik atau rumah sakit (Halil et al., 2021).

Studi lain menunjukkan bahwa setengah dari responden yang diteliti menyelesaikan pendidikan di tingkat sarjana, namun tidak ditemukan secara signifikan terkait dengan skor pengetahuan pertolongan pertama (Alatreez et al., 2021). Sosial ekonomi juga merupakan faktor penting yang dipertimbangkan dalam luka bakar (Ibrahem et al., 2017). Dalam penelitian kami, sebagian besar orang tua berasal dari keluarga dengan tingkat pendapatan terendah (Ibrahem et al., 2017). Pendapatan yang tinggi meningkatkan kemampuan untuk tinggal di tempat tinggal yang aman dan mampu membeli peralatan keselamatan, sehingga

mengurangi eksposur risiko (Mortada et al., 2020). Sehubungan dengan hubungan karakteristik demografi dengan pengetahuan dan praktik terhadap orang tua untuk luka bakar dan infeksi, dalam penelitian ini kami menemukan bahwa beberapa faktor seperti: tingkat pendidikan, status usia dan status pekerjaan peserta mempengaruhi secara signifikan pengetahuan tentang luka bakar dan infeksi (Juškauskienė et al., 2017).

Berkaitan dengan upaya pencegahan terhadap kejadian luka bakar pada anak, strategi pencegahan harus meningkatkan keyakinan orang tua tentang risiko anak mereka cedera luka bakar sekaligus meningkatkan kompetensi mereka terkait pertolongan pertama atau bertindak cepat dan tepat jika terjadi luka bakar. Meningkatnya kesadaran orang tua tentang frekuensi dan tingkat keparahan luka bakar, dan puncak kejadiannya pada anak di bawah dua tahun, akan lebih mempersiapkan mereka untuk mengambil tindakan pencegahan untuk menjaga keselamatan anak mereka (Burgess et al., 2019).

Sangat penting bagi orang tua menyadari tentang pertolongan pertama luka bakar yang benar mengingat bahwa sebagian besar kejadian ini terjadi di rumah. Bagi orang tua dari anak-anak yang sangat kecil yang paling berisiko mengalami luka bakar akibat air panas sehingga pengetahuan tentang metode sederhana untuk mengobati luka bakar ini jika terjadi dapat sangat membantu. Orang tua harus memiliki insentif untuk berubah, harus merasa terancam oleh perilaku mereka saat ini dan harus merasa bahwa perubahan akan bermanfaat.

Dalam upaya menangani rendahnya pengetahuan orang tua tentang pertolongan pertama, maka pencegahan primer adalah cara terbaik untuk mengurangi masalah keterlambatan pertolongan pertama luka bakar yang signifikan. mengajarkan cara pertolongan pertama luka bakar menjadi salah satu bagian utama dalam pengelolaan luka bakar, terutama untuk mengurangi penyembuhan yang lama dan keparahan serta komplikasi luka bakar. Orang tua menargetkan pengetahuan yang memadai tentang pendidikan pertolongan pertama luka bakar bertujuan untuk menilai pengetahuan dan keyakinan orang tua terhadap pertolongan pertama luka bakar dan pencegahan luka bakar pada anak. Beberapa penelitian yang di *review* menunjukkan beberapa keterbatasan; karena sifat survei dari penelitian ini, jawaban responden terutama bergantung pada pendapat dan pemikiran subjektif mereka, yang mungkin mempengaruhi keandalan temuan. Temuan tidak dapat divalidasi secara eksternal dan diekstrapolasi ke seluruh tempat.

Berdasarkan hasil review dari penelitian ini adalah pertolongan pertama yang cepat pada luka bakar dapat mengurangi keseriusan dan kedalaman kerusakan jaringan, yang juga akan mengurangi efek sampingan, termasuk mengurangi durasi rawat inap dan tingkat intervensi bedah. Pengetahuan orang tua dalam penanganan pertolongan pertama luka bakar harus diperhatikan karena orang tua yang akan menangani pertama ketika terjadi insiden, sebelum intervensi paramedis dan sebelum korban di rujuk ke rumah sakit. Dengan demikian gambaran dari penelitian ini adalah untuk mengetahui pengetahuan orang tua terhadap pertolongan pertama luka bakar pada anak.

Rendahnya pengetahuan tentang pertolongan pertama luka bakar yang benar yang dilaporkan dalam *review* artikel ini konsisten dengan banyak penelitian lain yang menunjukkan bahwa orang tua sebagian besar tidak mengetahui bagaimana melakukan pertolongan luka bakar dengan tepat. Pengetahuan orang tua tentang luka bakar dan pencegahan luka bakar terutama pada anak akan mengurangi beban dan kelangsungan luka bakar.

BAB 6

PENUTUP

6.1 Kesimpulan

Berdasarkan hasil *review* tujuh artikel menunjukkan pengetahuan terbanyak ada tiga artikel yaitu kategori pengetahuan sangat lemah, buruk dan sangat kurang, kemudian terdapat dua artikel dengan kategori pengetahuan mengetahui dan memadai, dan artikel lainnya kategori pengetahuan sedang dan baik. Dari hasil *review* tujuh artikel terdapat tiga artikel menunjukkan rendahnya pengetahuan orang tua tentang pertolongan pertama luka bakar yang di sebabkan oleh beberapa karakteristik seperti tingkat pendidikan, jenis pekerjaan, serta jenis pertolongan yang di peroleh, sehingga masih banyak orang tua yang pengetahuannya rendah dalam melakukan pertolongan pertama luka bakar pada anak, orang tua juga perlu di dasari dengan pengetahuan yang cukup, dengan demikian orang tua mampu memahami dan mengetahui cara melakukan pertolongan pertama luka bakar pada anak.

6.2 Saran

6.2.1 Bagi Perawat Khususnya yang Menangani Keperawatan Keluarga

Adapun hasil literatur *review* ini diharapkan dapat meningkatkan pengetahuan orang tua dengan memberikan edukasi dengan metode penyuluhan kepada orang tua tentang pertolongan pertama luka bakar pada anak.

6.2.2 Bagi Peneliti Selanjutnya

Diharapkan dari hasil *literature review* ini untuk peneliti selanjutnya dapat memperdalam cakupan penelitian dengan mencari artikel-artikel yang lebih luas seperti jurnal internasional untuk melengkapi *literature review* ini sehingga hasilnya lebih akurat.

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LEMBAR LAMPIRAN

Lampiran 1 Jadwal Kegiatan

Kegiatan	Sept	Okt	Nov	Des	Jan	Feb	Mar	Apr	Mei	Jun	Jul	Ags
Pengajuan judul dan Pembimbingan	√											
Penyusunan Proposal		√	√	√	√	√	√					
Sidang Proposal								√				
Penyusunan Hasil dan Pembahasan									√	√	√	
Sidang Akhir Skripsi												√



Knowledge and practice of burn first aid among parents of under-age children[☆]



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KEYWORDS

Burn first aid;
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Abstract The objective of this study is to assess the level of knowledge and practice of burn first aid management among parents. A cross-sectional study was conducted among parents of under-age children in the Taman Desa Darul Naim area of Pasir Tumbuh, in Kelantan, Malaysia, using an adapted survey from Davies et al. Out of 80 respondents, 46.3% showed minimal knowledge of burn first aid, 47.5% had moderate knowledge, and 6.3% extensive knowledge. There was a significant relationship between the demographic data and the knowledge of burn first aid for gender ($p=0.02$), but no significant relationship between the level of knowledge and level of education ($p=0.29$) or age ($p=0.09$). The findings indicate that the level of knowledge of burn first aid is limited. Education for parents of under-age children, including demonstrations of burn first aid, is needed to promote safe action and prevent further injury in the community. © 2020 Elsevier España, S.L.U. All rights reserved.

Introduction

It is estimated that about 26,500 deaths are reported every year due to burn injuries affecting the skin or organic

tissues.¹ They are caused by heat, radioactivity, electricity, friction, or exposure to chemicals, and are part of a global public health crisis in which more than 90 percent of cases have been reported in low-income to middle-income countries.² A burn is a dynamic condition where within a few hours, a first-degree burn injury can have a more profound effect on the skin structure and change to second-degree, and a second-degree burn could worsen to third-degree.³ Prompt first aid to the burn injury could reduce the seriousness and depth of tissue damage, which will also reduce knock-on effects, including reducing the duration of the hospital and the extent of surgical intervention.⁴ One of the most effective treatments is to cool the burned parts using

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luke-warm running water with an optimum temperature of 15 degrees Celsius for 20 min.⁵

There are many ways of treating burn injury practiced by society.⁶ Unfortunately, many of these suggested treatments are still practiced even though there is no reason or strong evidence to support their effectiveness. Among the pre-hospital remedies frequently used are cold or luke-warm water, ice, oils, powders, and natural plant therapies, the effectiveness of which may not be supported by research. In Malaysia, most people believe in using traditional treatments rather than getting immediate treatment from nearby clinics or hospitals even for minor burns that occur at home, such as spillages of hot liquids or splashes of hot oils. They prefer to use soy sauce, butter, toothpaste – anything that is easy to find in their home – as first aid for their burns, rather than running water for 20 min.⁷ The public's knowledge and practice in relation to the first aid management of burns should be addressed as it is the public who will tackle the problem first when an incident occurs, before the intervention of a doctor or paramedics, and before a victim is sent to a clinic or hospital. Thus, the objective of this study is to assess the level of knowledge and practice of burn first aid management among parents of under-age children.

Methods

We conducted a cross-sectional study design involving parents of under-age children in one residential area in Kelantan to determine their levels of knowledge concerning burn first aid. We used Krejcie and Morgan's sample size table as a means of calculating the sample size for this study.⁸ According to the table, if the population is 100 and the sample size required is 80 people. The researcher distributed the questionnaire to 80 respondents. The questionnaires used in this study were adapted⁹ and adopted by consensus of a panel of experts in emergency and nursing care for burns through a forward and backward translation process. The questionnaire was in two parts: Part 1 contained eight questions about Sociodemographic Data: age, gender, ethnicity, level of education, occupation, and course. Part 2 had 14 questions to do with knowledge and practice about burn first aid, including types of first aid, the first type of aid used, how long-running water was used on the wound, and the material used to cover the burn. The end of this section asked respondents whether they knew or knew more about first aid. Responses to the statements were measured using a 4-point Likert scale: 'strongly agree', 'agree', 'disagree', and 'strongly disagree'. A pilot study was conducted to determine whether the instrument used for the measurement had high reliability and validity. Fifteen adults participated in the pilot study, which revealed a Cronbach alpha value of 0.53. A Cronbach alpha value is 0.5 and above shows that the research questions are appropriate and applicable.¹⁰ The suggested sample size for a pilot study ranges from 10 to 30.¹¹

We obtained approval from Open University Malaysia (OUM) to conduct this study. Upon approval by the university, the researcher applied for and obtained permission from the head of the residential area (*Penggawa*) Pasir Tumbuh, where the location of this study. The research involved residents in Taman Desa Darul Naim area in Pasir Tumbuh

Table 1 Characteristics of participants (n = 80).

	Frequency	Percentage
<i>Gender</i>		
Male	26	32
Female	54	68
<i>Age (years)</i>		
21–30	7	10
31–40	23	29
41–50	38	47
Above 51	12	15
<i>Race</i>		
Malay	71	89
Chinese	4	5
Indian	3	4
Others	2	2
<i>Marital status</i>		
Married	74	93
Divorced	6	7
<i>Religion</i>		
Islam	71	89
Buddhism	3	4
Christianity	1	1
Hinduism	3	4
Others	2	2
<i>Level of education</i>		
Primary school	4	5
Secondary school	51	64
Diploma and above	25	31
<i>Occupation</i>		
Government servant	20	25
Private company	14	18
Self-employed	46	57
<i>First aid knowledge</i>		
Yes	9	11
No	71	89

district. The researcher distributed this questionnaire to respondents, Taman Desa residents, for data collection. The questionnaires were only given to respondents who met the criteria as set by the researcher. The researcher obtained verbal and written consent from the respondents. Respondents were asked to give honest and sincere responses based on their knowledge and understanding related to the study being conducted. Respondents were given 15–20 min to answer the questionnaire. Then the data from the completed questionnaires were entered into a database using SPSS version 24.

Results

Table 1 shows the characteristics of the participants in terms of gender, age, race, marital status, religious belief, level of education, occupation, and first aid knowledge.

Table 2 shows the frequency and percentage of the level of knowledge regarding burn first aid among parents of under-age children. The majority of respondents had low

Table 2 Frequency and percentage of the level of knowledge regarding burn first aid among parents ($n=80$).

Category	Frequency	Percentage (%)
Low	37	46.3
Moderate	38	47.5
High	5	6.3

($n=37$, 46.3%) to moderate ($n=38$, 47.5%) knowledge, while only five respondents (6.3%) had extensive knowledge of burn first aid.

Table 3 shows the distribution of answers from the burn first aid questionnaires completed by parents of under-age children. Three items show higher mean values as compared to the rest; item number 11 'first aid as initial treatment in rescuing victim' (mean = 3.67, SD = 0.47); item number 4 'in the event of fire, stop and roll if the clothes are on fire' (mean = 3.51, SD = 0.50); and item number 10 'depth of wound will increase if no burn first aid' (mean = 3.48, SD = 0.50). Meanwhile, the lowest three items are item number 12 'burn first aid is common and does not require health education' (mean = 1.67, SD = 0.54); item number 5 'burn first aid with running water' (mean = 2.27, SD = 0.63); and item number 7 'running water to the burn area can reduce pain' (mean = 2.43, SD = 0.65).

Table 4 shows the analysis of respondents' preferred technique in administering burn first aid. Most of the respondents used plain water (26%) or soy sauce (25%) to treat burn injury at home followed by the egg (11%). Eight respondents (10%) used toothpaste and butter, respectively. The other

Table 4 Analysis of respondents' preferred techniques for burn first aid.

Technique	Frequency	Percentage
Plain water	21	26
Soy sauce	20	25
Egg	9	11
Toothpaste	8	10
Butter	8	10
Ice	6	8
Coldwater	5	6
Wheat flour	3	4

six respondents (8%) used ice, five (6%) used cold water, and three (4%) used flour as first aid for burn injury.

Discussion

The findings of this study indicated that parents of under-age children have a low to moderate level of knowledge regarding burn first aid at home. They lack information about how to react to burn injuries in their children. Previous studies show that more than half of the adult population lacks knowledge about first aid,⁹ and that less than one-third of the parents have extensive knowledge about the emergency treatment of burns, which is almost identical to the findings of this study. In Australia, a study involving 2602 respondents who answered the questionnaire found that 30–50% of respondents gave wrong answers about the first aid management of burns.⁴ It is evident that a lack of knowledge

Table 3 Distribution of answers for burn first aid questionnaires among household parents.

No	Statement	Strongly disagree %	Disagree	Agree	Strongly agree	Min	Standard deviation
1	Burn first aid is a life-saving action.	0	0	55	45	3.45	0.50
2	Burn first aid could be done anywhere.	0	0	82.5	17.5	3.17	0.38
3	Most cases of burns occur in children.	0	2.5	50.0	47.5	3.45	0.54
4	In the event of a fire, stop and roll if the clothes are on fire.	0	0	48.8	51.3	3.51	0.50
5	Burn first aid with running water.	6.3	63.8	26.3	3.8	2.27	0.63
6	Burn first aid by holding the affected area under running water for 20 min.	1.3	61.3	30.0	7.5	2.43	0.65
7	Running water to the burn area can reduce pain.	0	55.0	37.5	7.5	2.52	0.63
8	All types of burn wounds should be treated at a nearby clinic or hospital.	0	15.0	57.5	27.5	3.12	0.64
9	If there is any swelling, remove any constricting items such as rings, bracelets.	0	0	82.5	17.5	3.17	0.38
10	Depth of wound will increase if no burn first aid.	0	0	51.3	48.8	3.48	0.50
11	Burn first aid is used as an early treatment to rescue the victim.	0	0	32.5	67.5	3.67	0.47
12	Burn first aid is common and does not require health education.	36.3	60.0	3.8	0	1.67	0.54

regarding burn first aid is a global issue, and serious action should be taken to prevent further complications. Studies in New South Wales found that the general population had little or no knowledge about the treatment of burn first aid, and that respondents who spoke English were more knowledgeable than those who did not speak English, which was probably due to the researchers using phone calls for data collection.¹² Every region of every continent in the world has an issue with knowledge deficiency regarding burn first aid, particularly among the parents and guardians of children.

Everyone should be educated in burn first aid. It is important that all classes of the general public should understand the concepts and that basic management of first aid should be emphasized.⁶ Burn first aid courses are important and very relevant to meet the needs of community living, as researchers believe that most of our society is not accustomed to the situation and thus suffer anxiety or panic when seeing someone injured, similar to other research studies that reported the influence of cultural context in Malaysia.^{13,14} These accidents can happen anywhere at home or at school, in the workplace, and so on. All cases should be given emergency assistance or early treatment to provide relief to the victim and to attempt to prevent the injury from becoming more severe or critical during the time it takes to obtain treatment from a clinic or hospital. Children being scalded at home were reported to be among the more common cases seen at hospitals.¹⁵ The most common remedies used by parents are water and soy sauce. It is believed that the use of soy sauce is culturally informed from generation to generation without any research evidence. Although running water is the most strongly recommended method, the respondents did not know that the required time to hold the burn under running water is at least 20 min.

There are some studies that dispute the effects of care, such as Vaseline and toothpaste being applied to the burned parts. In 2003, there was a study that disputed the use of Vaseline in burn first aid in which the researcher stated that the grease of Vaseline did not allow the release of heat from the burns and possibly even promoted infections.¹⁶ In addition, studies have found that toothpaste may stick to the burns and cause wounds to take longer to heal.¹⁷ Another clinical treatment study on children's health in Australia at Queensland's Royal Children's Hospital studied the use of 'Burn-aid', one of the 'hydropressing' containing tea tree oil now available on the market, as a treatment for burns.

Conclusion

This study has identified the level of knowledge about and practices used to burn first aid among parents of under-age children in one of the residential areas in Malaysia. The level of knowledge was found to be low, and various methods are used to manage burn injury at home, which are based on the local context. As a result, it is fair to conclude that there is a need to burn first aid education for parents, to teach them how to manage burn injuries effectively and safely within the community. The traditional ways and alternative methods by parents to treat burn injuries require further investigation. Apart from increasing knowledge and

improving practice, burn first aid education will also create a sense of well-being and safety within society.

Conflict of interest

The authors declare no conflict of interest.

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ORIGINAL ARTICLE

Knowledge and practice about first aid for pediatric burn injuries among parents in Abha and Khamis Mushait, Saudi Arabia

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ABSTRACT

Background: Burns in children are not uncommon and can lead to significant complications that may be up to death. Rapid interventions and first aid measures could reduce the incidence of complications and reduce the skin's affected area by the burn. Accordingly, the good knowledge of parents toward burns in children is crucial. The objective of this study was to explore the knowledge and practice of parents in Abha and Khamis Mushait, Saudi Arabia, about the first aid for pediatric burn injuries.

Method: This is a cross-sectional survey study that was carried out by sending an online Arabic questionnaire to parents living in Abha and Khamis Mushait cities in Saudi Arabia to explore their knowledge and practice toward Pediatric burns. The survey included questions about parents' demographics and questions related to pediatric burns. Data analysis was executed through statistical package for social science version 26.

Results: A total of 764 parents from Abha (56.2%) and Khamis Mushait (43.8%) participated in this study. Among them, 35.5% of the parents had children who had previous burns and 52% of the parents knew about the topic, where 22.5% had their information through social media. About a third of the responders did not know the degree of burn accompanied by fluid-filled blisters and the degree that is accompanied by dry, charred, and inflamed skin. More than half of the responders had good practices towards first aid for pediatric burns. Factors significantly contributing to high knowledge levels about first aid for pediatric burns are: age between 31 and 40 ($p = 0.017$), mothers ($p = 0.001$), living in Abha city ($p = 0.019$), having more than two children ($p = 0.001$) and attending previous first aid sessions ($p < 0.001$).

Conclusion: Despite the low level of parents' knowledge toward first aid for pediatric burns, parents showed good practice toward the topic under investigation. Similar studies are suggested in other areas in Saudi Arabia.

Keywords: Pediatric burns, first aid, knowledge, practice, Saudi Arabia.

Introduction

Accidental burns usually happen in children. Hospitals treat hundreds of children from burns every year. Most burns are because of tea or coffee [1]. Notably, cooling a burn diminishes agony and reductions burn profundity, thus speeding recuperating times and reducing the danger of scarring [2,3]. Thermal injury is the third most common cause of injury-related deaths in the industrial world. Burns are thusly a gigantic societal and individual burden [4].

Different ways are there for cooling the burns like cold water or tape water. Drawn out cooling, even at 18C, may result in hypothermia, so it is suggested that the influenced zone be cooled for at least 20 minutes, while keeping whatever is left of the patient warm.2,3

Iced water (<4C) develops tissue damage because of vasoconstriction, and furthermore builds the danger of hypothermia [3,5].

A study done by Martin et al. [1], in Emergency Department and Acute Wound Clinic, the Children's Hospital at Westmead, Sydney which was conducted

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on 109 children who has minor burns to distinguish the sufficiency of medical aid care following minor burns in kids. This study demonstrates that there is a need to teach the parents and health care workers with respect to fitting emergency treatment for burns [1].

A prospective study of 826 pediatric burn cases was conducted by Sharma PN found that gender and nationality had no influence on incidence or mortality. He advised to stimulate the development of targeted and sustainable interventions for reducing burns occurrence among identified pediatric high-risk groups [6]. In Hong Kong, a study was conducted on 1,063 acute burn patients who were admitted to the Burn Unit of Prince of Wales Hospital. The mortality group had significantly larger burn size ($P<0.001$), higher incidence of inhalation injury ($P<0.001$) and older age ($P<0.001$) compared to the survivors [7]. In Jeddah, Saudi Arabia 319 patients with different types of burns were studied at King Fahd Hospital, Jeddah. Scalding was the most common cases (56.4%) of burn injuries compared with 41.4% of patients who sustained flame injury; 84.6% of the thermal injuries occurred at home, with children < 18 years of age). The overall mortality was 9.4% [9]. In Southwestern, Saudi Arabia a study was done to assess the pattern and demographic aspects of children burns injuries (BI) at the Aseer Central Hospital. The study demonstrated that the dominant part of BI happens in youngsters aged 5 years and beneath and the vast majority of these wounds happened at home. Single wounds prevailed and length of healing center remain associated well to the degree of burned body surface region [10]. Through 8 years, A retrospective study of 435 consecutive admissions to a regional burns region, The author mentioned that Good initial resuscitation, a low infection rate (18.4%) and the ready availability of appropriate surgical intervention (35.6%), with good intensive care support, could give good satisfactory outcomes [8].

Subjects and Methods

This cross-sectional study was conducted during 1/4/2020-1/10/2020 (6 months) among all parents in Abha and Khamis Mushait. The parents who worked in the healthcare field were excluded from this study.

A self-administrated questionnaire was used to assess the knowledge and practice of parents. Data were collected by sending an online Arabic questionnaire to parents living in Abha and Khamis Mushait cities and verified manually, then it was coded before entering it to the computers. The statistical package for social science software version 22.0 was used for data analysis.

Results

Seven hundred and sixty-four parents from Abha and Khamis Mushait participated in this study. All descriptive and comparative analyses are shown below.

Among the 764 parents, 56.4% were mothers. The age was categorized into six age groups, 38.7% were in the

age group between 31 and 40 years old, while only 0.3% of parents were older than 70 years old. As for the place of residency, 56.2% lived in Abha city. The educational level varied among participants. 64.9% had a university degree, while 1.2% were illiterate. Additionally, 49.3% had more than two children, as shown in Table 1.

The responders were also asked if their children had any previous burns in the past. 35.5% of the parents had children who had prior burns, as shown in Figure 1.

The parents were asked about their knowledge and source of information about first aid of pediatric burns. 52% of the parents knew about the topic, where 22.5% had their information through social media, 43.6% did not know a specific source of information about first aid in children, and 27.5% attended a previous course about first aid before, as shown in Table 2.

Assessment of knowledge and practices of parents

Furthermore, parents' knowledge and practices toward first aid burns in children were evaluated through a set of questions. As for parents' knowledge, about a third of the responders did not know the degree of burn that

Table 1. Demographics of the parents.

	Count	Percent
Gender		
Father	333	43.6
Mother	431	56.4
Age category		
20-30	247	32.3
31-40	296	38.7
41-50	156	20.4
51-60	47	6.2
61-70	16	2.1
More than 70	2	0.3
Place of residency		
Abha	429	56.2
Khamis Mushait	335	43.8
Educational level		
Illiterate	9	1.2
Primary school	16	2.1
Secondary school	154	20.2
Intermediate education	27	3.5
University degree	496	64.9
Postgraduate degree	62	8.1
How many children do you have?		
I do not have children	97	12.7
One child	130	17.0
Two children	160	20.9
More than two children	377	49.3

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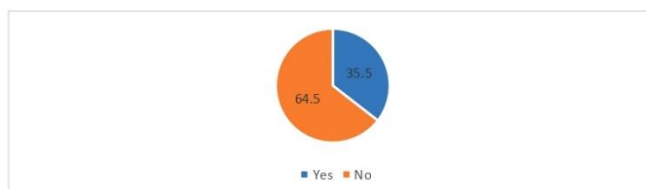


Figure 1. Parents with children who had previous burns.

Table 2. Knowledge and sources of information about first aid on burns in children.

		Count	Percent
Do you have previous knowledge about first aid for burns in children?	No	367	48.0
	Yes	397	52.0
What is your source of information?	Social media	172	22.5
	Courses and training	72	9.4
	Television and media	38	5.0
	Books	21	2.7
	More than one source	128	16.7
	I do not know about it	333	43.6
Have you attended any First aid courses before?	No	554	72.5
	Yes	210	27.5

Table 3. Knowledge about First aid for pediatric burns.

		Count	Percent
What is the degree of burning that appears on the skin in the form of fluid-filled blisters?	First degree	137	17.9
	Second degree	304	39.8
	Third-degree	66	8.6
	I do not know	257	33.6
What is the degree of burning that the skin and body tissues appear to be dry/charred / white-yellow-red and inflamed?	First degree	90	11.8
	Second degree	131	17.1
	Third-degree	281	36.8
	I do not know	262	34.3
What is the degree of burning that shows the redness of the skin only?	First degree	414	54.2
	Second degree	38	5.0
	Third-degree	102	13.4
	I do not know	210	27.5

is accompanied by fluid-filled blisters and the degree that is accompanied by dry, charred, and inflamed skin. In contrast, 54.2% of the parents knew that first-degree burn shows only redness of the skin. As shown in Table 3.

As for parents' practices, almost half or more than half of the responders agreed on acceptable practices toward first aid for burns in children regarding the pharmacological and non-pharmacological measures that should be carried out, as shown in Table 4.

Different demographic variables were compared over parents' knowledge toward first aid for pediatric burns using chi-square testing at a level of significance p -value < 0.05 , to understand the factors affecting their level of knowledge.

It has been demonstrated that age between 31 and 40 (p -value = 0.017), mothers (p -value = 0.001), living in Abha city (p -value = 0.019), having more than two children (p -value = 0.001), and attending previous first aid sessions (p -value < 0.001) were all significant factors

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Table 4. Practices of parents toward first aid for burns in children.

		Count	Percent
The first step in treating burns is to stop the burning process by pouring cold water on the burn site?	Agree	441	57.7
	Disagree	323	42.3
Use ice directly on the burned skin?	Agree	242	31.7
	Disagree	522	68.3
Do I keep the burned skin in cold water for at least 5-15 minutes?	Agree	431	56.4
	Disagree	333	43.6
If the clothes are stuck on the leather, do not peel the leather. Leave it in place. I only cut the surrounding clothes	Agree	629	82.3
	Disagree	135	17.7
If the burn is light, can an antibiotic ointment be applied?	Agree	587	76.8
	Disagree	177	23.2
To calm a burn, use butter and grease or paste on the burn	Agree	239	31.3
	Disagree	525	68.7
To cover the burn, use non-stick gauze or clean cloth	Agree	537	70.3
	Disagree	227	29.7
I do not pick at the blisters full of fluid and pus surrounding the burn nor try to get them out or empty their contents.	Agree	656	85.9
	Disagree	108	14.1
For pain relief, I use an over-the-counter infant pain reliever for my baby like paracetamol (Fevadol) or acetaminophen (Tylenol)	Agree	344	45.0
	Disagree	420	55.0
To relieve pain, use an over-the-counter pain reliever for children 6 months and older, such as ibuprofen	Agree	217	28.4
	Disagree	547	71.6
Go to the doctor if the burn appears to be inflamed (red, swollen, painful)	Agree	715	93.6
	Disagree	49	6.4
If your child's temperature with the burn is higher than 38.5 ° C, you should contact the burn unit or your pediatrician to evaluate your child's condition	Agree	722	94.5
	Disagree	42	5.5
When my child wants to play outdoors, protect the child's face from direct sunburn by wearing a large protective hat	Agree	608	79.6
	Disagree	156	20.4
Playgrounds and sports that require physical activity and direct contact with players for children with burns should be avoided until the injuries heal?	Agree	702	91.9
	Disagree	62	8.1
Third-degree burns are severe and require immediate medical attention	Agree	587	76.8
	Disagree	74	9.7
	I do not know	103	13.5

contributing to a better level of knowledge towards first aid for pediatric burns, as shown in Table 5.

Discussion

Pediatric burns are a leading cause of morbidity and mortality in children [11]. In addition to the children's significant psychological affection, it can lead to a significant disability that might have an impact on the quality of life of the children over their lifespan [14]. Consequently, parents should be aware of common risk factors for burns and the immediate first aid measures that should be taken in case of burns, particularly burns of higher degree levels [13].

The present investigation examined the level of knowledge and practices of parents living in Abha and Khamis Mushait cities on the first aid for pediatric burns.

The study demonstrated that the knowledge of parents is inadequate and requires improvements though their practices were considered good. Additionally, the most significant factors affecting their knowledge were age between 31 and 40 (p -value = 0.017), mothers (p -value = 0.001), living in Abha city (p -value = 0.019), having more than two children (p -value = 0.001) and attending previous first aid sessions (p -value < 0.001).

Knowledge and practices about first aid in pediatric burns have been examined in different settings. In Nour et al. [14] examined parents' knowledge and practices towards first aid of home accidents, including burns in children. The study included only mothers and demonstrated a low level of knowledge about pediatric first aid. Mothers who knew were mainly through social media. Also, Nour et al. [14] showed that less than a third of the responders had good practices.

knowledge and practice about first aid for pediatric burn injuries

Table 5. Factors affecting the level of knowledge towards first aid for pediatric burns.

		Do you know about First aid for burns in children?		p-value
		Yes	No	
Age group	20-30	29.5%	35.4%	0.017
	31-40	40.1%	37.3%	
	41-50	21.9%	18.8%	
	51-60	6.8%	5.4%	
	61-70	1.5%	2.7%	
	More than 70	0.3%	0.3%	
Gender	Father	38.0%	49.6%	0.001
	Mother	62.0%	50.4%	
Residency	Abha	60.2%	51.8%	0.019
	Khamis Mushet	39.8%	48.2%	
Educational level	Illiterate	1.5%	0.8%	0.201
	Primary school	3.0%	1.1%	
	Secondary school	17.6%	22.9%	
	Intermediate education	3.3%	3.8%	
	University degree	66.5%	63.2%	
	Postgraduate degree	8.1%	8.2%	
Number of children	I do not have children	8.8%	16.9%	0.001
	One child	17.6%	16.3%	
	Two children	24.7%	16.9%	
	More than two children	48.9%	49.9%	
Attending previous first aid sessions	Yes	61.2%	15.3%	<0.001
	No	38.8%	84.7%	

Similarly, the present study demonstrated that more than a third of the parents did not know about first aid in pediatric burns. At the same time, social media was the major source of information for 22.5%. On the other hand, more than half of the responders showed good practice towards first aid in pediatric burns. It is worth mentioning that the present study included both mothers and fathers rather than including mothers only, as in Nour et al. [14].

Furthermore, Ebadi et al. [15] examined the impact of an educational course on pediatric first aid on the knowledge and practices of mothers who had children aged less than 5 years old. The study demonstrated that mothers' knowledge has significant improvement after the course, which was described as "poor" before the course [15]. This improvement in knowledge was parallel to improving the practice towards pediatric first aid [15].

Although the present study did not use an educational session to improve parents' knowledge, the practices of parents were good toward first aid in pediatric burns without educational sessions and despite the poor knowledge level. Additionally, attending previous first aid sessions showed a significantly higher level of knowledge toward first aid in pediatric burns than their peers.

Another study by Gholap et al. [16] focused on evaluating the knowledge and practices of mothers who had toddlers. Gholap et al. [16] showed that almost half of the mothers knew pediatric first aid, while the major source of information was social media. The outcomes of the present study support these findings.

Additionally, the present study investigated the major factors contributing to good knowledge levels about first aid of pediatric burns between 31 and 40, mothers living in Abha city, having more than two children, and attending previous first aid sessions.

Finally, the present study showed some limitations; due to the survey nature of this study, the responders' answers depend mainly on their subjective opinion and thoughts, which might affect the reliability of the findings. Additionally, being carried out in only two cities in Saudi Arabia. The findings cannot be externally validated and extrapolated to all over the kingdom.

Conclusion

The knowledge of parents living in Abha and Khamis Mushait cities is considered as poor; however, parents' practice toward first aid for pediatric burns is acceptable. Burns among children in the two cities are common

knowledge and practice about first aid for pediatric burn injuries

(almost a third of participating parents had children who had burns). Accordingly, further efforts to improve parents' awareness of the prevention of burns in children is crucial. Additionally, first aid awareness sessions should be held for parents not only on pediatric burns but also about other pediatric injuries. Through this study, it is highly recommended that similar studies be carried out in other areas in Saudi Arabia to explore parents' knowledge and practices on a national level.

List of Abbreviations

BI Burn Injuries

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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None.

Consent to participate

Informed consent was obtained from all the participants.

Ethical approval

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Mother's Characteristics, Knowledge and Practices about Children Burn Injury in Sulaimani City

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Abstract: Burn is described as one of the leading causes of injury throughout the world, and is one of the most frequent causes of hospitalization. The aim of this study was to determine mother's characteristics, Knowledge and practices for burn injuries and burn infection prevention. A cross sectional descriptive study was undertaken in Sulaimani city, Iraq, from October 2015 to July 2016. Participants were evaluated using a structured questionnaire by face-to-face interview. Data were computerized and analyzed using Statistical Package for Social Sciences version 22.0 software. A total of 126 mothers who had burn injury in their children and admitted to burning hospital during the study period, the mean score knowledge of mothers was (3.63), the mean score practice of mothers accounted (4.63), the respondent practice score ranged from (1-8). They had poor, intermediate, and good score knowledge about burns injury and burn infection 79.37%, 18.25%, and 2.38% respectively. In regard to mother's related practice, there were 66.67% within poor practice level, 30.95% of an intermediate level, and 2.38% had a good practice level. The study shows that mother knowledge and practice in Sulaimani city in relation to burn injury and infection among their children was at a low level and the local health authority should incorporate health education for parents, especially mothers in the prevention of pediatric burn at home involving hot liquid and flames also other domestic hazardous as well as the important activities after burn or pre-hospital admission.

Keywords: Burn, Children, Knowledge, Practice, Prevention, infection

1. INTRODUCTION

Burn is described as one of the leading causes of injury throughout the world, and is one of the most frequent causes of hospitalization. Burn is a major cause of morbidity and mortality, and it is the fourth most common type of trauma worldwide [1, 2]. Burn is a major issue on public health in terms of infection control and cost of treatment in both developing and developed countries, and burn in pediatric range from minor to severe injuries [3]. Injuries in pediatrics are predictable, avoidable and preventable. Burn prevention is unavoidable parts of every child care program and an important responsibility of both parents and caregivers. Parents with burn injury experiences can help children to

avoid being burned [4, 5]. high incidence of childhood burns among Low-income population is because of poor parent's educational level [6]. But in high-income countries the variation rate of burn injury are nearly the same level in all educational families such as in Denmark the rate per 1000 childhood injuries is 1.8 % in high education level, secondary school 2.0% and primary school 2.8 % [7].

Parents' knowledge about burn injuries and burn preventions especially in children will decrease the burden and ongoing the burn [5]. First aid is a basic rule by cooling the burned area, prevent ongoing burning and prevent contamination. Cooling burn is one of the oldest methods for treating [6]. First aid is an important practice and it should be done after each burn injury by the families, cooling the burn surface for 5 minutes is a good example practice [8].

According to the WHO hand washing improvement strategy and hand hygiene is a certain rule to protect patients from pathogen which transports by health care worker and parents hands [9]. A previous study showed England parents have more tends to wash their hands rather than the Taiwan parents before and after touching patients, and Taiwan patients have more visitors than England patients [10]. Also a previous study demonstrated that personal hygiene among the mothers was a good way of preventing infections, most mothers submitted the hygienic practices, by washing their hands, especially before and after eating, before holding the child [11]. The aim of this study was to determine mother's characteristics and assess their Knowledge and practices for burn injuries and burn infection prevention.

2. PATIENTS AND METHODS

A cross sectional descriptive study conducted from October 2015 to July 2016 at Sulaimani Burn and Plastic Surgery Hospital, Sulaimani, Iraq. Which is the main hospital for treatment of severe burns for many years and that has been giving routine health services for Sulaimani city and other referral cases from different regional states of Iraq.

Sample collection

A questionnaire was used to collect data from the mother's patient, self-administered questionnaire by face to face interview. Pre-test was used in 5% of the sample

size before the study is started. The questionnaire contains three major sections: Mothers Socio-demographic characteristics, mothers' knowledge about burn injury and infections and practices to prevent burn injury and infections.

First section consists of 7 questions regarding background information of participants. The following data were obtained from mothers whom with burn injury in their children and admitted to the burn units; registration data: age, occupation, family size, educational level, socio-economic status, number of children and parental observation status were include.

Second section concerns knowledge questions about burn injury and infection as well as preventable thinks; this section consists of 11 questions. The participants could choose one from two predetermined options which were (Yes) and (No) answer. Each correct answer received one point for (Yes) answers and zero for (No) answers. The knowledge scoring range was from zero (minimum score) to 11 (maximum score). The scale classified knowledge levels as: poor knowledge, intermediate knowledge and good knowledge level.

Third section concerns practices questions about preventable practices for burn injury and infection. This section consists of 2 parts. First part focused on practices before hospitalization, which contain 6 questions. The participants had two predetermined options to choose between which was (Yes) and (No) answer to determine practice level. Each correct answer received one points while zero point was given for incorrect answers. Second part focused on practice after hospitalizations which consist of 5 questions. Mothers had two choices to answer (Yes) and (No), who answered (Yes) received one point and (No) received zero point.

Statistical analysis

Data were computerized and analyzed using Statistical Package for Social Sciences (SPSS software, version 22.0). Mean and confidence interval are used to summarize continuous variables whereas categorical variables to be summarized in form of proportions and frequency tables. Chi-square (χ^2) test was used to test for significance of associations between the predictor and outcome variables in the categorical variables to find an outcome related to health issues. Analysis of variance (ANOVA) was used to compare mean scores of variables to find association with P-value of ≤ 0.05 .

Ethical issues

Official letter of permission from technical college of health, community health department was submitted to burn and plastic surgery hospital. The study was carried out after the approval by the college committee. Collected data was kept confidential and no one except the members of the research team had access to the collected information. An oral informed consent was also obtained from mothers who participated in the study.

3.RESULTS

Mother's characteristics

A total of 126 mothers participated in the study, of these 70 (55.6%) of them were illiterate, followed by primary education level, secondary and higher education level 34(27.0%) and 22(17.5%) respectively. Also mother's occupation status classified on to three groups, housewives were 116 (92.1%), governmental employee were 7 (5.6%), and teachers 3(2.3%). 89 (70.6%) cases were from rural area and 37 (29.6%) were from urban area. Mothers who had more than 3 children accounted majority of cases 76 (60.3%). The majority of mother ages were less than twenty five years 51 (40.5%), followed by more than thirty years of age 48 (38.1%) and then 25-30 years 27 (21.4%). Regarding mother socio-economic status the majority of cases was with low economic status 93 (73.8%). According to the observation by their parents, highest of cases were with single parents observation 89 (70.6%) (Table 1).

Mother's knowledge and practice score level

A total of 126 mothers who had burn injury in their children and admitted to burn hospital during study period, the mean score knowledge of mothers was 3.63 (95%CI 3.29-3.99) (Table 2), the respondent knowledge score ranged from (0-9). The mean score practice of mothers accounted 4.63 (95% CI 4.33-4.9) (Table 2), the respondent practice score ranged from (1-8). They had poor, intermediate, and good score knowledge about burn injury and burn infection 79.37%, 18.25%, and 2.38% respectively.

In regard to mother's related practice, there were 66.67% within poor practice level, 30.95% within intermediate level, and 2.38% had a good practice level (Figure 1).

Mother's knowledge

The first four part of knowledge section of questioner focused on mothers knowledge about burn injury and factors leading to burn injury. Majority of mother have no information about burn injury and factors leading to burn injury, 63.5% mothers had not information about mechanism of burn injury, while 77.0% of them did not have knowledge about factor leading children to burns, and 77.8% of mothers did not have knowledge for ways to prevent burn injury. Also 56.3% of mothers had no information about presence of burn hospital in Sulaimani city (Table 2).

Also majority of mothers 77.8% did not have information about prevention of burn infection. About transmission of microbial in burn patients; 54.0% were accounted. For question about immediate transport patient to hospital, the highest proportion of mother's respondent answered (No) accounted 52.4%.

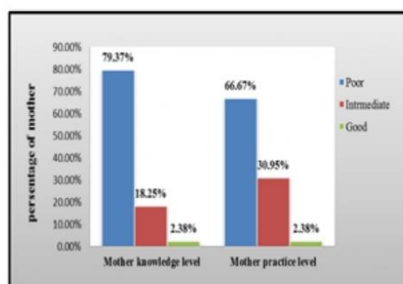
Regarding mother's knowledge about personal hygiene is one way to prevent burn infection; those answered (Yes) and (No) were equal to 50% (Table 2).

Table 1: Socio-demographic Characteristics of mothers. (No.=126)

Characteristics	No.	(%)
Mothers education level		
Illiterate	70	(55.6)
Primary	34	(27.0)
Secondary & Higher	22	(17.5)
Residency		
Urban	37	(29.4)
Rural	89	(70.6)
Mothers occupation		
Housewives	116	(92.1)
Governmental staff	7	(5.6)
Teacher	3	(2.3)
Mothers age group		
<25	51	(40.5)
25-30	27	(21.4)
>30	48	(38.1)
No. of children		
<3	50	(39.7)
≥3	76	(60.3)
Mothers socio-economic status		
Low	93	(73.8)
Mild & Good	33	(26.2)
Present of both mother & father during time of burn		
No	89	(70.6)
Yes	37	(29.4)

Table 2: Knowledge of mothers on burn injury and burn infection. (No.=126)

Knowledge		No.	(%)
Mechanism of burn injury	No	80	(63.5)
	Yes	46	(36.5)
Type of burn infection	No	117	(92.9)
	Yes	9	(7.1)
Factors leading children to burn injury	No	97	(77.0)
	Yes	29	(23.0)
Prevention of children from burn injury	No	98	(77.8)
	Yes	28	(22.2)
Burn hospital	No	71	(56.3)
	Yes	55	(43.7)
Crowding & visiting to burn patient are risks for infection	No	100	(79.4)
	Yes	26	(20.6)
First aid is good after burn injury	No	76	(60.3)
	Yes	50	(39.7)
Immediate transport burn patient to hospital	No	66	(52.4)
	Yes	60	(47.6)
Personal hygiene one way to prevent burn infection	No	63	(50.0)
	Yes	63	(50.0)
Prevention of burn infection	No	98	(77.8)
	Yes	28	(22.2)
Transmission of microbial in burn injury	No	68	(54.0)
	Yes	58	(46.0)

**Figure 1** knowledge and practice level of mothers**Mother's practice to prevent burn injury and burn infection**

The practice sections of questioner consist of two parts, first part; focused on practices done by mothers before admitted to hospital (before occurrence and after burn injury). The study showed that 98 (77.8%) cases were not separated cooking parts from other part inside the home and statistically not significant to infection $p=0.1$, the same percent showed with mothers no avoiding their children away from cooking place during cooking times. 97 (77.0%) of mothers do not covered the wound after injury for their children. Also majority of mothers 69 (54.8%) did not performed first aid or cooling the burn after injury and statistically not significant to infection $p=0.5$. The highest proportion of positive mothers practices were immediately transport patient to hospitals, and done health care for their children after burn injury in another health center 97 (77.0%), and 70 (55.6%) respectively (Table 3).

Second part of questioner; focused of parent practice after admitting to hospitals. Out of 126 mothers 117(92.9%) were received health education by health care workers. Regarding practice about washing hands

after eating, 62(49.2%) of mothers were with no hand washing and statistically significant to infection $p=0.02$. Also majority of mothers were not used mask during health care 107(84.9%), which is not significantly related to infection $p=0.9$. In addition mothers who respondent to practices were 89(70.6%) at high proportion in washing their hand before dealing and contacted with their children, but 37(29.4%) of mothers were with no hand washing before dealing with the patient that is statistically highly significant to infection ($p<0.001$). Regarding family members visiting to hospital, less of patients 34(27.0%) had visitor, and it is highly statistical significant to infection $p<0.001$ (Table 3).

Mean Score levels

The mean score of mothers regarding knowledge about burn injury and infection was 3.63 (95%CI 3.29-3.99) (Table 4). The mean score of mothers with both secondary and higher educational level was 4.59 (95%CI 3.56-5.62), while the mean score for mothers with no education level was 3.33 (95%CI 2.88-3.77), these differences were statistically significant (P -value=0.03). In addition, the mean score of mothers occupation for the housewives was 3.33 (95%CI 3.11-3.84), but mean score for the teacher was 7.00 (95%CI 2.7-11.3), this difference was statistically significant $p=0.003$. Mothers >30 years of ages had greater mean score knowledge 3.98 (95%CI 3.39-4.57), also mothers from mild to good socio-economic families had greater mean knowledge score 3.94 (95%CI 3.21-4.67) (Table 4).

Regarding the mean score of the practices, the mean score was 4.63 (4.33-4.90), and there was not any significant correlation for all the socio-demographic characteristics (Table 4).

4. DISCUSSION

It is known that effective surveillance and early detection of infections in burn patients help in better management of patients and reduce emerging infection, mortality rate, length of hospitalization and associated cost [12]. Few studies were conducted about pediatric burn injury in Kurdistan region [13-15].

A total of 126 mothers participated in the study, those who were younger than 25 years old their children were at the risk to burn injury 40.5%. The result is in agreement with a study done by Laursen, B. and J.W. Nielsen in Denmark which reported that the risk of injury was higher for children in families whose mothers' age less than 25 years old [7]. This is explained that older ages of mother have more experiences related to enhance the development of safety habits, leading to burn injury reduction.

The current study result showed that burn injuries were more frequent in families whose mother at low education (illiterate) levels. This finding is in agreement with Siaw, N.A. study which is obtained that low parental education level is a major risk for burn injury among their children [16], but the result is not consistent with Laursen, B. and J.W. Nielsen which reported that mothers with primary education level are more relevant to cause burn in their children [7]. In addition, a study by Tse, T., et al

revealed that the majority of parents who have children with burn injuries completed secondary educational level [17]. Result of the current study, revealed that burn injury are more frequent in families who have more than three children 60.3%. A previous study by Laursen, B. and J.W. Nielsen from Denmark showed the same finding for a child who burned at home [7]. But Marissa Bane revealed that 61.10% of burn injury occurred when 1-2 children present at home [18].

Socioeconomic level also is an important factor considered in burn injury. In our study, most of mothers are from families with the lowest income level 73.8%. This is similar to the WHO global burden of disease project makes it clear that burns are important contributor to overall disease among children in low and mild income families [6]. A high income increases the capability to live in safe dwelling and able to buy safety equipment, thus reducing the risk exposure.

In the present study 63.5% of 126 mothers did not have knowledge about the mechanism of burn injury and 92.9% of them had no information about burn infection. As well as 77.0% of them did not have information about factors leading children to burn injury and 77.8% of mothers had no information about the ways that prevent children from burn injury. Our finding is agree with the results of previous study which obtained by Chikwanha, T.M., T. Chinhengo, and A. Chadambuka [19]. Also most of mothers did not have knowledge about burn hospital and should immediately transport burn patients to burn hospital. This finding disagree with the study done by Rimmer, R.B., and his coauthors which reported that parents of children with visible burn have more concern about early transporting burn patient to hospital [4].

In the current study most of mothers did not take precautions about separating the cooking place from the other parts at home and did not take their children away from the cooking place during cooking time. These findings are consistent with a study done by Chikwanha, T.M., T. Chinhengo, and A. Chadambuka [19]. This is probably due to lack of burn prevention precaution within the home, especially during meal preparation which is required to prevent burn injury. Pre hospital care in our study is not applied adequately and it could be due to lack of implementing educational program for parents and they not have desire to follow up and look up for health subjects.

Overall mothers had poor, intermediate and good scores knowledge on the burn injury, burn prevention and burn infection in percentage of 79.37%, 18.25% and 2.38% respectively. Therefore, the score ranging for practice section is like the above about mothers practice on prevention burn injury and burn infection in percentage 66.67%, 30.95% and 2.38% respectively. These differences may be due to the participant's information on burn injury and burn prevention. Also depriving the communities to health and prevention education have a role in this outcome.

Table 3: Practice of mothers on burn injury and infection. (No.=126)

Practices		No. (%)	Not infected No. (%)	Infected No. (%)	p-value
Practices before admitted to hospital					
Place of cooking separated from other part in home	No	98(77.8)	63 (64.3)	35 (35.7)	0.1 ^a
	Yes	28(22.2)	22 (78.6)	6 (21.4)	
Your children away from cook place during cooking times	No	98(77.8)	63 (64.3)	35 (35.7)	0.1 ^a
	Yes	28(22.2)	22 (78.6)	6 (21.4)	
Covering wound after burn	No	97(77.0)	64 (66.0)	33 (34.0)	0.5 ^a
	Yes	29(23.0)	21 (72.4)	8 (27.6)	
Immediately transported to burn hospital	No	29(23.0)	20 (69.0)	9 (31.0)	0.8 ^a
	Yes	97(77.0)	65 (67.0)	32 (33.0)	
'Before admitted to hospital given any health care for your child in another health center	No	56(44.4)	35 (62.5)	21 (37.5)	0.2 ^a
	Yes	70(55.6)	50 (71.4)	20 (28.6)	
Doing first aid after burn injury	No	69(54.8)	45 (65.2)	24 (34.8)	0.5 ^a
	Yes	57(45.2)	40 (70.2)	17 (29.8)	
Practices after admitted to hospital					
Received health education after admission by health care worker about hygiene	No	9(7.1)	5 (55.6)	4 (44.4)	0.4 ^a
	Yes	117(92.9)	80 (68.4)	37 (31.6)	
After eating cleaned your hand	No	62(49.2)	36 (58.1)	26 (41.9)	0.02 ^a
	Yes	64(50.8)	49 (76.6)	15 (23.4)	
Used mask when remain with your child	No	107(84.9)	72 (67.3)	35 (32.7)	0.9 ^a
	Yes	19(15.1)	13 (68.4)	6 (31.6)	
Other family member visited the patient	No	92(73.0)	77 (83.7)	15 (16.3)	<0.001 ^a
	Yes	34(27.0)	8 (23.5)	26 (76.5)	
Before touch your child cleaned your hand	No	37(29.4)	15 (40.5)	22 (59.5)	<0.001 ^a
	Yes	89(70.6)	70 (78.7)	19 (21.3)	
^a chi-square test was used.					

^a chi-square test was used.**Table 4:** Association of socio-demographic variables with the knowledge and practices mean score of the respondents. (No.=126)

Respondents (N=126)					
Variables	No.	Knowledge score Mean (95% CI)	p-value	Practice score Mean (95% CI)	p-value
Mothers education level					
Illiterate	70	3.33 (2.88-3.77)	0.03 ^a	4.61 (4.24-4.99)	0.9 ^a
Primary	34	3.65 (2.94-4.35)		4.62 (3.97-5.26)	
Secondary & Higher	22	4.59 (3.56-5.62)		4.68 (4.01-5.36)	
Mothers age group					
<25	51	3.07 (2.29-3.86)	0.1 ^a	4.65 (4.19-5.11)	0.8 ^a
25-30	27	3.58 (3.02-4.15)		4.74 (4.14-5.34)	
>30	48	3.98 (3.39-4.57)		4.54 (4.04-5.04)	
Mothers socio-economic status					
Low	93	3.53 (3.11-3.94)	0.6 ^a	4.57 (4.23-4.91)	0.4 ^a
Mild & Good	33	3.94 (3.21-4.67)		4.79 (4.25-5.33)	
Mothers occupation					
Housewives	116	3.33 (3.11-3.84)	0.003 ^a	4.59 (4.29-4.90)	0.6 ^a
Staff	7	4.84 (3.40-6.31)		4.86 (3.73-5.98)	
Teacher	3	7.00 (2.7-11.3)		5.33 (3.90-6.77)	
Residency					
Urban	37	4.35 (3.60-5.11)	0.01 ^a	4.30 (3.74-4.86)	0.1 ^a
Rural	89	3.34 (2.95-3.73)		4.76 (4.43-5.10)	
Overall	126	3.63 (3.29-3.99)		4.63 (4.33-4.90)	
a One-way ANOVA t-test with Tukey's comparison was used					

a One-way ANOVA t-test with Tukey's comparison was used

In regards the association of demographic characteristics with knowledge and practice toward mothers for burn injury and infection, in the present study we found that some factors such as: education levels, residency and occupational status of participants affected significantly the knowledge level of burn injury and infection. The present study showed that there were statistical significant differences between education level and knowledge of the mothers in which the higher education level has a greater mean score knowledge, $p=0.03$. While in terms of practice score there were no statistical significant differences between educational level and practices, but mothers with higher education level have little bit greater mean practice score. This means; when the educational level raised the knowledge and practices for burn prevention will probably increase.

In this study, mothers in urban residence had a greater mean score knowledge rather than rural residence and this difference statistically significant $p=0.01$. Regarding mothers knowledge about burn injury and infection, mothers living in rural areas tend to have less access to educational opportunity and health services. On the other hand, mothers' practices in rural residents have greater mean practice score than urban resident.

Conclusion

Mother knowledge and practice in Sulaimani city in relation to burn injury and infection among their children was not sufficient. Age, educational level, occupational status, family size, residency and poverty of parents, especially mothers was related to burn injury in pediatric population. Mother's knowledge and practice regarding first aid in the study was in a low level. Hand washing for mothers indicated serious problem to emerging burn infection on their children. The health education program is suggested to increase mother knowledge and practices about burn injury in children.

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CONFLICT OF INTEREST

The researcher declares that they have no conflict of interests.

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Parental Knowledge, Attitudes and Practices Towards Burn First Aid and Prevention of Pediatric Burns in Jeddah, Saudi Arabia: A Cross-Sectional Study

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ABSTRACT Aim: The purpose of this study was to assess the knowledge and beliefs of caregivers in Saudi Arabia towards burn first aid and prevention of pediatric burns, and whether awareness score correlates with different demographic factors. **Methods:** This cross-sectional study was conducted between February 10 and May 15, 2018, via a self-administered questionnaire among a convenience sample randomly selected Saudi parents above 18 years old with children below 12 years, during awareness week in a shopping mall in Jeddah, Saudi Arabia. The questionnaire composed of two main parts, including demographics and questions related to burn prevention and its first aid. Chi-square test was used to evaluate the correlation between awareness scores and demographic variables. The analysis was performed using SPSS version 20 (IBM, Armonk, NY, USA). **Results:** This study included 469 respondents (93.2% response rate). The mean age of the respondents was 35.25 (± 12.52) years; half of the respondents (50.5%) held a bachelor's degree. When asked burn-related questions, 29.0% used traditional remedies to treat burns; and 64.8% agreed on applying water after burns. The overall mean score of knowledge was 5.77, SD ± 1.44 and ranged between 1 and 10. Demographic variables (age, gender, education) were not found to be associated with burn-awareness scores according to this study. **Conclusion:** The results show that parental knowledge and attitude towards burning first-aid and its prevention in Saudi Arabia are inadequate and that health care providers should shed light on deficiencies and start to spread knowledge and educate the community.

KEYWORDS Burn First Aid, Awareness, Pediatric, Scalding burn, Traditional Remedies

Introduction

Out of all injuries and major health problems, burns are among the most distressing and fall in fourth place in the most common causes of trauma globally, after motor vehicle accidents, falls, and violence [1-3]. The burn is defined as an injury to the skin

or any organic tissue mainly caused by flame heat, electricity, radioactivity, radiation or due to chemicals. It's a major public health issue. According to the latest WHO data (2018), about 265,000 deaths happen every year from fires alone, with more deaths from electrical burns, scalds, and other forms of burns [4]. While non-fatal burns are the most common cause of morbidity, including disfigurement, prolonged hospitalization and disability, and often causes rejection and stigma [5]. Burns are potentially destructive injuries with many possible harmful consequences, including psychosocial, physical, physiological, and occupational. Globally, nearly 200,000 deaths occur from burns every year [3]. Several studies have reported the prevalence of burns in Saudi Arabia, and their findings were similar to data from other parts of the globe [6-8]. Approximately 0.3% of the Saudi population was reported to be affected by burns [5,9].

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Table 1 Baseline characteristics of the respondents (N = 469).

Variable		n (%)
Age (SD)		35.25 (± 12.52)
Gender	Male	142 (30.3)
	Female	310 (66.1)
	Refused to answer	15 (3.2)
Education	Secondary	122 (26.0)
	Bachelor's degree	237 (50.5)
	Higher Education	47 (10.0)
	Refused to answer	63 (13.4)

Burn-injury management begins immediately following the incident during the pre-hospital course. Simple first-aid measures such as applying cold running water for 20 to 30 mins at a temperature of between 10 and 15 C to all kinds of thermal burns are well proven by studies to alleviate pain, reduce the progression of burn injury and mortality, less frequent follow-up visits in the long term and its considered the most needed [10]. According to previous studies conducted around the globe, have stated that most of the burn injuries happen in the pediatric age group, and most of them occur at home. Scald injuries are the most common type of burn injuries, while the flame type of injuries comes 2nd [11,12]. When it comes to dealing with this burden, primary prevention is the best way to reduce this significant health issue in the community, as providing burn first remains one of the main parts in the management of burns, especially as it reduces complications of burn injuries [12]. While little data exist in the literature about the current level of knowledge among caregivers in Saudi Arabia on pre-hospital burn management, as it is vital to expand our understanding in this area and determine any demographic variations affecting it, for better and more accurate targeting of insufficient knowledge. Although studies regarding the education of burn first aid have been conducted in other parts of the world [13-16], no recent studies have been carried out in Jeddah, Saudi Arabia. The purpose of this study was, therefore, to assess parental knowledge and beliefs towards burn first aid and prevention of pediatric burns in Jeddah, Saudi Arabia, and whether awareness score correlates with different demographic factors.

Methods

Study design and data collection

This observational cross-sectional study was conducted via a self-administered questionnaire among a randomly selected sample during awareness week in a shopping mall in Jeddah, Saudi Arabia. The data were collected from February 10 to May 15, 2018. We included Saudi parents above 18 years of age, with children below 12 years. All who participated in this study were informed about our aim of this article, and their identity and responses were kept anonymous and who approved to participate were included. Individuals who failed to finish the questionnaire or refused to participate were omitted.

Questionnaire variables

The questionnaire was formulated based on our study objectives and from available questionnaires with similar objectives [14]. Other similar available surveys helped in formulating some of the questions used in the survey. However, further questions were formulated and added to answer our own study objectives. The survey was composed of 10 questions divided into two main parts: demographics and questions related to burn prevention, and it's first aid. The first part included age, gender and level of education. The second part aimed to assess the knowledge and perception towards burn first aid among the pediatric age group. The total score of awareness was 10 and ranged between 1 and 10; a higher score indicated more awareness about burn first. To make sure the questionnaire with valid and reliable, a pilot study was done among 20 parents to enhance the survey's content/face validity and to decrease the chance responses discrepancies among parents. The Institutional Review Board approved this study of King Abdulaziz Medical City in Jeddah, Saudi Arabia.

Statistical methods

Age was the only continuous variable and is presented as mean (standard deviation). Categorical variables are presented as frequencies and percentages. The awareness score was calculated by assigning one point to the response 'agree' in each burn-related question. Other responses were given zero points. Chi-square was used to test the correlation between categorical variables. Spearman and Pearson were used to testing the correlation between continuous variables. T-test was used to check whether there is a difference between males and females concerning knowledge and attitude. The analysis was performed at 95% confidence interval using SPSS version 20 (IBM, Armonk, NY, USA).

Results

This study included 469 respondents with an overall response rate of 93.2%. Mean age of participants 35.25 (±12.52) years; two thirds (66.1%) were female. Half of the respondents, 237 (50.5%) held a bachelor level of education, 122 (26.0%) received education to the secondary-school level, 47 (10%) studied higher education (Table 1). When asked burn-related questions, 36 (7.7%) of the respondents agreed on picking blisters; 29.0% used traditional remedies to treat burns; 67.2% agreed on to not apply for any first aid medicine at home on the burned area. Over

Table 2 Responses to burn-related questions (N = 469).

Question number	Questions	Answers	n	%
1	Correct to pick blisters before seeing a doctor.	Agree	36	7.7
		Disagree	406	86.6
		Don't know	22	4.7
		Refused to answer	5	1.1
2	Apply traditional remedies to the burn before going to the doctor, e.g. "flour, toothpaste, oil, coffee, etc." as first aid for burn wounds.	Agree	136	29.0
		Disagree	317	67.6
		Don't know	13	2.8
		Refused to answer	3	0.6
3	Its better if you don't apply any first aid medicine at home for the burn area so the doctor can assist early.	Agree	315	67.2
		Disagree	122	23.9
		Don't know	38	8.1
		Refused to answer	4	0.8
4	Enrolling your kids to help while cooking is harmless.	Agree	79	16.8
		Disagree	377	80.4
		Don't know	7	1.5
		Refused to answer	6	1.3
5	If your child gets burned, I will wait for it to heal.	Agree	43	9.2
		Disagree	399	85.1
		Don't know	20	4.3
		Refused to answer	7	1.5
6	If you are going to the doctor immediately after a burn injury, such as a scald, you need to cover the burn with a clean, dry cloth.	Agree	315	67.2
		Disagree	112	23.9
		Don't know	38	8.1
		Refused to answer	4	0.8
7	Burns are the most common accidents in children?	Agree	344	73.3
		Disagree	71	15.1
		Don't know	49	10.4
		Refused to answer	5	1.1

8	If a child has a simple burn, just clean the wound with cold water 3-5 minutes.	Agree	304	64.8
		Disagree	121	25.8
		Don't know	39	8.3
		Refused to answer	5	1
9	Children need to know about fire hazard and how to handle and report fire incidents.	Agree	455	97.0
		Disagree	8	1.7
		Don't know	5	1.1
		Refused to answer	1	0.2
10	Children need to know how to use the home fire extinguisher.	Agree	376	80.2
		Disagree	73	15.6
		Don't know	18	3.8
		Refused to answer	2	0.4

Table 3 Chi-square test results showing the associations between awareness scores and demographic variables (N = 469).

Factors	P value
Age	.999
Gender	.399
Education	.074

two-thirds of the respondents (73.3%) knew that burns are the most common accidents, and 377 (80.4%) felt that enrolling kids to help in the kitchen is not harmless. When their child has a burn injury, 399 (85.1%) agreed they would not wait and will seek medical advice immediately, and only 315 (67.2%) said they would cover the burn with a clean, dry cloth before going to the doctor. The majority (64.8%) agreed on applying water after burns, and nearly all respondents (97.0%) agreed that educating children is important; 80.2% agreed that education about fire extinguisher usage is important (Table 2). The mean overall score of knowledge and awareness towards pediatric burn first in our study was 5.77, SD $\pm$ 1.44 and ranged between 1 and 10; a higher score indicates more knowledge and awareness. Demographic variables (age, gender, education) were not found to be associated with burn-awareness scores according to this study (Table 3).

Discussion

In this study included 469 respondents. The mean age of the respondents was 35.25 years; most of the participants were females (66.1%). Half of the respondents (50.5%) held a bachelor degree. When asked burn-related questions, 29.0% agreed to use traditional remedies to treat burns; and 41.8% knew about burn first aid. Burn injuries are reported from all cities in Saudi Arabia from many different causes, include any part of the body, and affect all ages [17]. After a burn, adequate awareness of the appropriate immediate first-aid interventions can determine the

outcome of the burn injury and limit tissue damage and subsequent mortality and morbidity, including the need for surgical intervention [18]. Nowadays, with all the efforts of health care organizations towards educating the public about the benefits of applying cold water as initial management for acute burns [19,20], many people still use traditional remedies for first aid with no scientific evidence [21]. Several papers have been published from different countries on the assessment of pediatric burns first-aid awareness among caregivers. However, none were conducted in Jeddah. Therefore, the purpose of this study was to assess knowledge and beliefs about burn first aid and prevention of pediatric burns among Saudi parents and whether awareness score correlates with different demographic factors.

Our study shows that half of the respondents, 237 (50.5%), held education at the bachelor level, which was not found to be significantly associated with burn-awareness scores. A study conducted in Singapore found that a caregiver's level of education was a significant predictor of awareness towards pediatric burn first aid [15]. Regarding water application, more than half of our sample applied water as management for burns. This finding is consistent with a study from New South Wales, Harvey et al. found that 82% used water [22], and yet another study found 43% [14]. Most studies recommend using this method over any other therapy, and it has been the best and most active initial management in the past [23,24]. Nearly 97% of the caregivers in our sample agreed that it is essential to educate children about burn first aid, and 80.2% agreed to the statement on the impor-

tance of teaching children how to use fire extinguishers. These two results are very promising. One of the main findings of our study is that more than half of the caregivers (67.6%) disagreed with the statement about applying traditional remedies to a burn injury before going to the doctor. However, Suleiman published a cross-sectional study among the Saudi population to assess their awareness of herbal remedies and showed that 81.2% believed that using herbal remedies to treat burns is not harmful [25]. Another study by Kattan et al. revealed that 77.4% did use traditional remedies for burns [12]. Overall, when it comes to the management of burn injuries, the use of scientifically studied and recommended treatments are inexpensive, available, simple, and has no potentially harmful effects if applied appropriately in comparison to traditional remedies, most of which are never beneficial and make the management of the wound by doctors more difficult.

This study is one of the first of its kind in Jeddah, Saudi Arabia assessing the parent's perception and awareness about burn first aid and its prevention. Many different interventions can be carried out to increase awareness of this life-saving information. Self-explanatory brochures and awareness campaigns on immediate burn management and the nonbeneficial aspect of using traditional remedies can increase the public's perception and attitude. The limitation of this was a cross-sectional study is that we used a convenience sample, and results may differ across different sociodemographic variables. Therefore, there remains a need for additional, larger studies that would give more accurate estimations about the awareness of pediatric burn first aid among Saudi caregivers population. Secondly, the sample size was small, limiting the generalizability of findings, and we suggest multicenter studies. Thirdly, this study assessed parental knowledge and awareness without observing the actual practice.

Conclusions

Our results show that knowledge of burn first aid and its prevention among Saudi parents is low in some aspects, causing childhood burn injuries to be mismanaged by parents, possibly leading to worsening of injuries. There is a need to educate the public on the harmful effects of using traditional treatments rather than seeking medical care, which can lower the mortality and morbidity rates of this potentially serious injury.

Authors contribution

NT and MB collected the data and wrote the manuscript. MA supervised the designing of the study and contributed to manuscript writing. HM, MA interpretation of results, data analysis and also contributed to manuscript writing. All authors read and approved the final manuscript.

Availability of data and material

The data are available for public access and could be obtained from the corresponding author upon request.

Conflict of Interest

There are no conflicts of interest to declare by any of the authors of this report.

Ethical Approval

This study was approved by the Institutional Review Board of King Abdulaziz Medical City in Jeddah, Saudi Arabia. Reference number: A50126B2.

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Assessment of Parents' Knowledge about the Provision of First Aid to Their Children after Thermal Burn Injuries

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Key Words: thermal injuries, burns, child safety, first aid, trauma, knowledge.

Summary. In Lithuania, approximately 9.5 thousand inhabitants experience burn traumas each year, of which one-fourth are children. It is important to investigate knowledge that parents have about the causes of burn injuries and appropriate preventive measures, including the ability to provide first aid in a proper and timely manner. Qualified first aid provided by parents would enable saving children with burns or minimizing complications and long-term negative outcomes.

Aim. The aim of this study was to assess parents' knowledge of first aid in case of child burn injury in relation to their previous experience of burns.

Methods. Quantitative cross-sectional study design was applied. Two groups of parents/guardians were included in the study: (1) those whose child experienced thermal injury under 3 years of age and (2) families that had no experience of child thermal injury until they were 3 years of age or younger. In total, 243 parents were invited to take part in the study and 232 filled in the forms with the response rate of 95.5%. The data were collected between February and May, 2017. An anonymous questionnaire was developed by the researchers. Ethical permission to conduct the study was issued by the Bioethics Centre of the Lithuanian University of Health Sciences.

Results. The results are presented on 105 boys (45.3%) and 127 girls (54.7%) whose parents provided information for this study; 68 children (29.3%) had experience of burns. Boys suffered from burns significantly more often than girls (53.3% and 9.4%, respectively, $P < 0.001$). In 85% of the cases, hot beverages were the main cause of burns in children. The results revealed that 55 children (80.9%) were provided with first aid within the first 5 minutes after a burn and parents were those who most often (85.3%) administered first aid to their children. The experience of thermal burns in children was linked with the socio-demographic characteristics of their parents. Parents whose children did not have burns knew better how to behave in provided sample cases than those whose children had experience of burns. The results revealed that the average point of parents' self-assessed knowledge was 5.1 ± 1.98 (min – 1, max – 9, median – 5.0).

Conclusions. Parents who were younger, lived in the city, had higher education and were married had better first aid knowledge related to child burns. Self-assessment of knowledge about first aid in burns was higher in parents whose children never experienced burns. It is necessary to teach parents/guardians how to provide timely and proper first aid in case of a child thermal burn.

Introduction

Burns are a global public health problem, accounting for an estimated 180,000 deaths annually [1]. In Lithuania, approximately 9.5 thousand inhabitants experience burn traumas each year, of which one-fourth are children. Burns remain one of the main trauma causes in children [2]. Most often burns are experienced by children under the age of 2. Burns are extremely traumatizing and disabling injuries for children [3].

Timely, proper and qualified first aid would enable saving children with burns or providing them with help in serious burn cases, minimizing complications and long-term negative outcomes [2]. If

first aid is appropriate, pain is lessened, and tissue-injuring effects of high temperature are stopped, the skin's deep tissue is protected and the burn remains epidermal. Unfortunately, often used folk remedies or incorrect first aid usually do not ease the burn, but impair healing [3].

In Lithuania, an action plan for improvement of injury and accident prevention and reduction disability and mortality from external causes is in force. It is projected, by complex measures, to strengthen the prevention of traumas and accidents, as well as accidents, mortality and disability caused by external factors by improving the effectiveness of timely aid to injured persons minimizing negative side ef-

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fects and returning patients to active everyday life in the shortest term [4].

In a study of Shai (2009), the relationship between income, housing and fire injuries was assessed, and poor knowledge was related to the risk of burn injuries (Shai, 2009). The World Health Organization recognizes education of parents as crucial for child injury prevention (Peden, 2009). Lithuanian health care legislation regulates the duty and responsibility of primary health care specialists to inform and educate parents about traumas of child age, including burns [4]. Besides the standard education of families on the prevention of child burn injuries, it is important to investigate knowledge that parents have about the causes of burn injuries and appropriate preventive measures, including the ability to provide first aid in a proper and timely manner.

The aim of this study was to assess parents' knowledge of first aid in case of child burn injury, in relation to their previous experience of burns in children.

Methods

Quantitative cross-sectional study design was applied. The study sample consisted of parents/guardians of hospitalized children at the Pediatric Surgery Department of the University Hospital. In total, 243 parents were invited to take part in the study and 232 filled in the forms with the response rate of 95.5%. The data were collected between February and May, 2017.

Two groups of parents/guardians were included in the study: (1) those whose child experienced a thermal injury under 3 years of age and (2) families that had no experience of child thermal injury until their child was 3 years of age. The second group of parents/guardians were hospitalized with their children because of other pediatric reasons (appendicitis, fractures, abscesses, etc.).

An anonymous questionnaire was developed by the researchers after making a literature review and taking into consideration the personal experience of working in children's department. Multiple choice questions about the cause of burn injury, starting time of first aid provision and the first aid provider were included along with sociodemographic characteristics of a family and a child. To assess the level of parents'/guardians' knowledge about burn injuries and their prevention, the respondents were asked about safe behaviour skills at home, main causes and aggravating factors of burns in children, first steps in providing aid to a child after a burn and how to act if a blister appears. Three case studies were also described in a questionnaire and the respondents were requested to tick the right action for particular situation.

Ethical permission to conduct the study was issued by the Bioethics Centre of the Lithuanian University of Health Sciences (no. BEC-KS(M)-181).

Statistical data analysis was performed using Statistical Package for the Social Sciences for Windows 22.0. The study employed descriptive statistics (numerical characteristics: mean, standard deviation, frequency distribution expressed as percentage), correlation analysis (Pearson compatibility χ^2 test), dispersion analysis (nonparametric Mann-Whitney U test for comparison of 2 samples and Kruskal-Wallis H test for comparison of 3 and more samples). In order to compare the mean scores of the scales, parametric statistical criteria – Student t test for comparison of 2 samples and ANOVA F for comparison of 3 and more samples – were employed in the study. The statistical significance level used was $P < 0.05$.

Results

In relation to gender and age, 3 respondents (1.3%) were men and 55.2% of the study sample were younger than 30 years old. The respondents were distributed into three groups according to the education level. Besides, 80.2% of the respondents were married and 67.2% were on parental leave at the moment of the study (officially available up to 3 years). The socio-demographic characteristics of the respondents are presented in Table 1.

The results are presented on 105 boys (45.3%) and 127 girls (54.7%) whose parents provided information for this study; 63 children (29.3%) experienced burns. Boys suffered from burns significantly

Table 1. Socio-demographic Characteristics of Respondents (n=232)

Characteristic	n (%)
Age (in years):	
up to 29	128 (55.2)
≥30	104 (44.8)
Place of residence	
urban	167 (72.0)
rural	65 (28.0)
Education level	
primary	82 (35.3)
secondary	65 (28.1)
higher	85 (36.6)
Marital status	
married/partnership	186 (80.2)
divorced or single	46 (19.8)
Occupation	
parental leave	156 (67.3)
employed	61 (26.3)
unemployed	14 (6.0)
student	1 (0.4)

more often than girls (82.4% and 17.6%, respectively, $P < 0.001$).

The average age of children who experienced burns was 13.7 ± 4.8 months (min – 7, max – 36, median – 12) and there was no significant difference in relation to gender. More than half of toddlers (60.3%) had burns before the age of 12 months and 39.7% had burns after the age of 12 months.

In 85% of cases, hot beverages were the main cause of burns in children. The results revealed that 55 children (80.9%) were provided with first aid within the first 5 minutes after a burn. Parents alone most often (85.3%) administered first aid to their child or had family members helping them; in 4.4% of cases, care was provided by neighbors or friends and only in 10.3% of burn cases, first aid was provided by paramedics.

The experience of thermal burns in children was linked with the socio-demographic characteristics of their parents. Table 2 shows that occurrence of burns in children is significantly higher if parents are under the age of 30, live in a rural area, have primary or secondary education and are divorced, unemployed or are students (Table 2).

The assessment of parents' knowledge about immediate actions after the child experienced a burn revealed that 196 parents (84.5%) knew that the burned area had to be immediately cooled with water. Thus, the perception about what to do if a blister formed after a burn was significantly different between the two groups of parents. The parents whose child was burned provided the incorrect answer that if blistering occurred it had to be punctured, covered in cream and wrapped in a sterile bandage more frequently ($P < 0.01$). On the contrary, the parents whose child had no burns knew better that blisters should not be touched until medical care was given and that clothing and jewellery should be removed from around the affected area ($P < 0.01$) (Table 3).

During the survey, the parents were given three different cases to assess their first aid knowledge. The summary of the responses received from the situations presented demonstrated that parents'

Table 2. Distribution of Children with Burns according to the Socio-Demographic Characteristics of Their Parents (n=68)

Characteristic	n (%)	P
Age (years): up to 29 ≥30	54 (79.4) 14 (20.6)	<0.001
Place of residence: urban rural	17 (25.0) 51 (75.0)	<0.001
Education: primary secondary higher	60 (88.2) 7 (10.3) 1 (1.5)	<0.001
Family status: married divorced/single	36 (52.9) 32 (47.1)	<0.001
Occupation: parental leave working unemployed/student	44 (64.7) 10 (14.7) 14 (20.6)	<0.001

knowledge about first aid in burn cases was not good. Only one-third of the interviewed parents would do the right thing in all three situations. In these situations, the parents whose children did not have burns knew better how to behave than those whose children experienced burns.

The most appropriate duration for cooling the burned area is 10 to 20 minutes. In our study, 60 parents (25.9%) selected this answer correctly with no significant difference in relation to social-demographic characteristic of the parents.

The parents were asked to self-evaluate their knowledge of first aid in case of a child burn on a 10-point scale where 1–4 points reflect very weak knowledge, 5 points refer to weak knowledge, 6 points refer to satisfactory knowledge, 7 points refer to sufficient knowledge, 8 points refer to good knowledge, 9 points refer to very good knowledge, and 10 points evidence perfect knowledge of par-

Table 3. Knowledge of Parents about the Actions if a Blister Appears after a Burn in Relation to Their Experience of Burns in a Child

Action if a blister appeared after a burn	Burn experience in a child, n (%)		P
	No n=164	Yes n=68	
Puncture the blister, cover it in cream and wrap in a sterile bandage (incorrect)	8 (4.9)	16 (23.5)	<0.001
Not to touch the blister until medical care is given (correct)	128 (78.0)	37 (54.4)	<0.001
Remove clothing around the affected area (correct)	66 (40.2)	12 (17.6)	0.001
Monitor swelling (correct)	11 (6.7)	11 (16.2)	0.025

Table 4. Distribution of Parents according to Their Knowledge about the Right Action if Their Child is Burned

Situation 1. A 2-year-old boy that is wearing a shirt and a diaper has scalded himself with a kettle of boiling water. How would you react in this situation?	Total n=232	Burn experience in a child, n (%)		P
		No n=164	Yes n=68	
Leave the clothing untouched, wrap the child in a towel and look for help (incorrect)	26 (11.2)	18 (11.0)	8 (11.8)	>0.05
Leave the clothing untouched, but cool with water (incorrect)	105 (45.3)	72 (43.9)	33 (48.5)	>0.05
Remove clothing, cool with ice (incorrect)	16 (6.9)	9 (5.5)	7 (10.3)	>0.05
Remove clothing, diaper, cool under running water for 20 minutes (correct)	54 (23.3)	48 (29.3)	6 (8.8)	<0.05
Do not know	31 (13.4)	17 (10.4)	14 (20.6)	<0.05
Situation 2. A 4-year-old girl has stepped barefoot into smoldering campfire embers. How would you react in this situation?				
Would immediately put out the camp fire, wrap the affected area in a bandage and look for help (incorrect)	25 (10.8)	17 (10.4)	8 (11.8)	>0.05
Would leave the camp fire and cool the feet with water (incorrect)	91 (39.2)	57 (34.8)	34 (50.0)	<0.05
Would put ice on the feet and drive to the nearest hospital (incorrect)	31 (13.4)	24 (14.8)	7 (10.3)	>0.05
Would immediately find a running source of water and cool the feet using it for 20 minutes (correct)	53 (22.8)	47 (28.7)	6 (8.8)	<0.05
Do not know	32 (13.8)	19 (11.6)	13 (19.1)	>0.05
Situation 3. A 3-year-old boy has spilled hydrochloric acid on his chest and clothes. How would you react in this situation?				
Would not touch the clothing, and would wrap in a clean towel and search for help (incorrect)	48 (20.7)	31 (18.9)	17 (25.0)	>0.05
Would not touch the clothing and would tell the child to sit in a bath with water (incorrect)	43 (18.5)	19 (11.6)	24 (35.3)	<0.05
Would remove clothing and apply ice (incorrect)	22 (9.5)	15 (9.1)	7 (10.3)	>0.05
Would remove clothing and cool in the shower for 20 minutes (correct)	57 (24.6)	51 (31.1)	6 (8.8)	<0.05
Do not know	62 (26.7)	48 (29.3)	14 (20.6)	>0.05

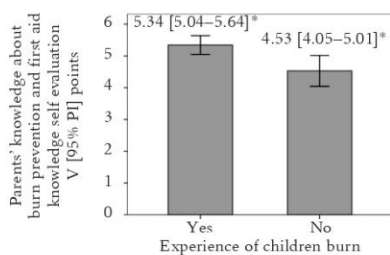


Fig. Distribution of respondents according to self-assessed knowledge of burn prevention and first aid, taking into consideration previous experience of child burn.

V – average, PI – confidence interval,
*P = 0.003 with Mann-Whitney test.

ents about first aid after a thermal burn of a child. The results revealed that the average point of parents' self-assessed knowledge was 5.1 ± 1.98 (min – 1, max – 9, median – 5.0). Almost half of the respondents assessed their knowledge as very weak (32.8%) or weak (12.1%), 22.0% as satisfactory, 15.9% as sufficient or good (6.9%), and 2.2% as very good. The level of knowledge was higher in parents without experience of a child thermal burn (5.34 ± 1.94 points and 4.53 ± 2.0 points, respectively, Fig.).

Discussion

In Lithuania, burns are experienced more often by boys, and these findings comply with the studies completed by other authors [3].

The results of our study confirmed that in most cases burns in children were caused by hot liquids.

According to Gružas (2013), scalding with hot liquids is recognized as the main etiological factor of children burns (87% of the cases); in children under the age of 3 years, it causes 95.6% of all burns. Scalding usually happens under exposure of hot water (57.6% of all scald cases) and water or tea (19.6% and 14.1%, respectively). Other hot food items (soups, porridges, fats, others) cause 8.7% of all burn cases [3]. Scalding with hot liquids is identified as the most common reason for burns in children by other authors as well [9]. Children scald themselves because their supervising adults do not evaluate the actual risks of liquids scalding the children [8].

In many countries, there are studies being conducted to find out if there is a connection between the characteristics of parents and the risk of burn injuries in children. It was determined that the risk of burns is higher if the mother has less than 6 years of work experience or has lost her job recently, or one or both of the parents are unemployed. Almost 60% of the parents whose children burned their hands with a hot iron were unemployed as found by a study in the United States of America [5]. Nevertheless, the statistical analysis could not confirm unemployment as a decisive factor for the frequency of burns [6]. Edelman (2009) concludes that the lack of education of parents, poverty, large families, and inappropriate living conditions raise the risks of burn injuries in children significantly [3].

In the case of thermal burn injury, proper first aid is the most effective remedy. In a study of Davis, Maquire and others (2013), 43% of parents had insufficient knowledge of first aid in case of burn injury. Training of burn injury first aid is important, but even after it only 74% of parents had appropriate knowledge how to act in case of a child burn. Correlations between parents age, gender, education and

knowledge were not found [10].

The parents' knowledge assessment revealed that two-thirds of parents in our study would immediately cool the burned skin of their child with water by providing first aid and this is a correct action that parents know well. Similar results were confirmed in a study of Graham, Bache and others (2012) [7]. However, our study revealed that parents lacked theoretical knowledge how to act in various situations after a child is burned. Only one-third of the respondents demonstrated sufficient knowledge on how to act properly in three cases provided.

It is necessary to inform and teach individuals, especially those with children how to provide timely and proper first aid in case of burns. This professional duty belongs to community care doctors and nurses who are primarily responsible for family health promotion and prevention. Right actions of those who help first would assure faster healing of children's injuries and prevent undesirable consequences and complications.

Conclusions

The occurrence of burns in children is significantly higher if parents are under the age of 30, live in a rural area, have primary or secondary education and are divorced, unemployed or are students.

Parents whose children had no experience of burns knew better how to act in thermal burn cases where first aid was required and knew how to act after a blister formed. Self-assessment of knowledge about first aid in burns was higher in parents whose children never experienced burns.

Therefore, parents should be informed and taught systematically by community care staff how to prevent thermal injuries and how to provide first aid to their children after thermal burn injury.

Tėvų žinių vertinimas apie pirmosios pagalbos suteikimą vaikams, patyrusiems terminius nudegimus

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Raktažodžiai: terminiai nudegimai, vaiko sauga, pirmoji pagalba, trauma, žinios.

Santrauka. Lietuvoje apie 9,5 tūkst. gyventojų patiria nudegimų traumas ir ketvirtadalis iš jų yra vaikai. Svarbu įvertinti tėvų žinias apie nudegimų priežastis ir apie tinkamas tokių traumų profilaktikos priemones. Viena iš šių priemonių – laiku ir teisingai tėvų suteikta pirmoji pagalba. Tėvų pagalba padėtų išgelbėti nudegusį vaiką arba sumažinti komplikacijas ir ilgalaikes neigiamas traumos pasekmes.

Tyrimo tikslas – įvertinti tėvų žinias apie pirmosios pagalbos teikimą vaikui, patyrusiam terminį nudegimą.

Metodai. Kiekybiniame tyrime dalyvavo dvi grupės respondentų: tėvai / globėjai, kurių jaunesnis nei 3 m. vaikas buvo nudegęs ir tėvai, neturintys vaikų iki 3 m. nudegimų traumų patirties. Tyrime dalyvavo 243 tėvai, iš kurių 232 atsakė į anketos klausimus (atsako dažnis – 95,5 proc.). Duomenys rinkti 2017 m. vasario – gegužės mėn. pagal autorių sudarytą anketą. Tyrimui atlikti išduotas Lietuvos sveikatos mokslų universiteto Bioetikos centro leidimas.

Rezultatai. Tyrime dalyvavę tėvai atsakė į anketos klausimus, perteikdami savo patirtį augindami sūnus – 105 (45,3 proc.) ir dukras – 127 (54,7 proc.). 68 (29,3 proc.) iš šių vaikų buvo patyrę nudegimus. Berniukams nudegimų pasitaikė reikšmingai dažniau nei mergaitėms (atitinkamai 53,3 proc. ir 9,4 proc., $p < 0,001$). Dažniausia (85 proc.) nudegimų priežastis buvo karšti gėrimai. Remiantis rezultatais, 55 (80,9 proc.) vaikams pirmoji pagalba buvo suteikta per 5 min. ir ją daugeliu atvejų suteikė tėvai (85,3 proc.). Tėvų sociodemografinės charakteristikos buvo susijusios su nudegimų traumos patirtimi. Tėvai, kurių vaikai nepatyrė nudegimų traumos, taip pat geriau žinojo, kaip elgtis patyrus vaikų nudegimų traumą. Patys tėvai savo žinias įsivertino vidutiniškai $5,1 \pm 1,98$ balais (min. – 1, maks. – 9, mediana – 5,0).

Išvados. Jaunesni tėvai, gyvenantys mieste, labiau išsilavinę, susituokę daugiau žinojo apie vaikų nudegimų traumas. Savo žinias apie vaikų nudegimus ir pirmąją pagalbą geriau įvertino tėvai, neturėję šių traumų patirties. Svarbu šviesti tėvus ir globėjus apie laiku ir teisingai suteiktą pirmąją pagalbą vaikams, patyrusiems terminius nudegimus.

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A Study to Assess the Knowledge of Mothers of under Five Children Regarding Burn and its Prevention in Selected Rural Area

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Abstract: Burns are common and serious childhood injuries causing prolonged effect on growing child with various complication and fatal prognosis. Approximately one fourth of burn cases are below 10 years of age and about 65 % of burnt children are below 5 years of age. 80 % burns occurs in the child's own home. It is very important to look into safety and security of children at homes. This will promote sound psychosocial development of children. Safety and security can be ensured by providing clean safe and comfortable physical environment.

Keywords: Knowledge, Mothers, Under five Children, Burn, Prevention, Rural

1. Introduction

Children are the future of every country and all societies strive to ensure their health and safety. Since India independence, continuous efforts have been made to improve the status of children. The large burden of communicable, infectious and nutritional disorders is gradually on the decline due to massive effort and investment by successive Indian government, even though it is unfinished agenda. Parallel to these changes, it is also becoming apparent that children saved from disease of yesterday are becoming victim of injury on road, at home, in public and recreational places. Children are naturally curious. As soon as they mobile begin to explore their surroundings and play with new objects, at the same time though, they come into contact with object that can cause severe injuries playing with fire or toughing hot objects can result in burn

A burn is defined as injury to skin and other organic tissue caused by thermal trauma, it occurs when some or all the cells in the skin or other tissues are destroyed by hot liquids (scalds), hot solids (contact burn), or flames (flam burns).

Risk factor of burn include, according to data collection from the national burn information exchange reveal that 75% of all burn injuries results from actions of victim, with many of these injuries occurring in the home environment

Childhood burns are largely environmentally conditioned and preventable. It would therefore seem natural that the prevention of burns should focus on a mixture of environmental modification. Parental education and product safety

Many times death results because of delay in reaching the casualty to appropriate medical care and low lack of knowledge regarding first aid and treatment on the contrary, if help is provided to casualty as soon as possible following the accident or injury, a life could be saved.

Statement of the Problem

A descriptive study to assess the knowledge of mothers of under five children regarding burn and its prevention in selected rural area with a view to develop a information booklet

Objective of the Study

- To assess the level of knowledge among mothers of under five children regarding burn and its prevention
- To associate knowledge of mothers with selected demographic variables.
- To develop an information booklet on burn and its prevention

Hypothesis

H₁: There will be a significant improvement in the knowledge of mothers regarding burn and its prevention after administration of information booklet.

H₂: There will be significant association between the knowledge of mothers of under five children with selected demographic variables.

2. Operational Definitions

- **Assess:** it is the organized systematic, continuous process of collecting data from mothers of under five children, regarding first aid for burn and its prevention
- **Knowledge:** in this study it refers to the awareness and understanding regarding first aid for burn and its prevention as assessed by structured questionnaire
- **Burn:** a burn is defined as an injury to the skin or other organic tissue caused by thermal trauma
- **Prevention:** It refers to the action taken prior to the occurrence and development of risk factors in population group, which remove the possibility that risk factor, will ever occur.
- **Mothers of under five children:** The mother who are having children below five year of age group. The infant,

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toddlers and preschooler together categorized as under five children

- **Rural area:** rural area is a group of people living in a geographical area where it does not have much facilities and away from the cities and towns and fulfills the criteria of rural
- **Information booklet:** refers to a set of written information and instructions related to burn and its prevention.

3. Research Methodology

Research Approach: the research design selected for present study was non experimental, descriptive design was consider as appropriate design in the view of the nature of the problem statement.

Setting of the study the study: Subjects were selected from rural are at Tumkur Karnatka. This setting was chosen on basis of investigators feasibility. In term of availability and accessibility of the mothers.

Population: All the mothers of under five children in selected rural area of Tumkur constitute the target population for the study.

Sampling: The process of selecting a portion of population to represent the entire population convenient sampling technique was used. The entire subject who fulfilled the inclusive criteria of the study was included.

Sample size: Out of defined population the researcher had selected the sample size of present study was 60 mothers of under five children who fulfilled the inclusive criteria of the study were included.

Inclusive Criteria

The samples were included who fulfilled the following criteria-

- Mothers who are having under five children.
- Mothers who are living in the rural area of Tumkur.
- Mothers who can read and write either kannada and English
- Those who are willing to participate in this study.

Exclusive Criteria

- Mothers who have completed family
- Mothers who will be selected for pilot study

Research Tool: Based on the objective of the study a structured questionnaire was prepared in order to access the knowledge of mothers of under five children regarding burn

and its prevention. The structured questionnaires are of two parts

Part 1: Consists of 10 demographic characteristics of mothers such as age, religion, educational status of mother and husband, occupation of mother and husband, family monthly income, type of family, housing conditions, mode of cooking and this was not scored but used for descriptive analysis.

Part II: It consists of 30 structured questionnaires to access the knowledge of mothers regarding burn and its prevention. Each correct answer was given a score of one and the wrong answer was given a score of zero.

Validity:

Content validity of tool was established by obtaining the suggestions from experts. The tool was validated by 08 expert in field of pediatric nursing, Pediatrician and statistician, Kannada language expert and English language expert. After consulting guide and statistician, the final tool was reframed. Tool was found to be validand suitable for the study.

Reliability

The tool after the validation was subjected to test for its reliability the reliability of tool was computed by split half method with accessed feasibility of the tool reliability, the tool for knowledge questions was found to be 0.904.

Data Collection Procedure

Permission from the concerned authority: formal permission was obtained from medical officer of rural area Tumkur

Period of data collection: the data collection procedure was carried out for a period of six weeks

Data analysis: the data obtained was analyzed in term of the objective of the study using descriptive and inferential statistics.

The plan for data analysis is as follow. Organization of the data in the master sheets or computer;

- Frequencies and percentages for the analysis of the demographic data
- Mean, SD, renegees of scores
- Chi square test to associate the demographic variables with knowledge on burn and its prevention among the others of under five children.

Section 1: Distribution of subjects according to socio demographic

Table 1: Demographic Profile, N=60

Demographic variables		No. of subjects	Percentages
Age	18-25	14	23.3
	26-30	30	50
	31-15	16	26.7
Religion	Hindu	36	60
	Muslim	16	26.7
	Christian	08	13.3
Educational status of mother	Primary	2	3.3
	Middle school	27	45
	High school	21	35
Occupational status of mothers	PUC	10	16.7
	Housewife	28	46.7
	Employed	17	28.3
Education of husband	others	15	25
	Primary school	23	38.3
	High school	09	15
Occupation of husband	PUC	13	21.7
	Graduation or above	15	25
	Employed	12	20
Family monthly income	Unemployed	30	50
	Business	18	30
	Rs.2500-3500	09	15
Type of family	Rs.3501-4500	30	50
	Rs.4501 & above	21	35
	Joint	31	51.7
Type of house	Nuclear	25	41.7
	Single parent	4	6.7
	Pucca	14	23.3
Mode of cooking	Semipucca	26	43.3
	kutchcha	20	33.3
	LPG	09	15
	Electricity	21	35
	Kerosene	19	31.7
	Wood	11	18.3

Section II: Assessment of knowledge of subjects regarding burn and its prevention**Table 2:** Knowledge Score Regarding Burn and its Prevention

Variables	No. of Items	Range		Knowledge score		
		Min	Max	Mean score	SD	Mean %
Knowledge	30	03	11	7.68	1.662	25.6

In the study 30 knowledge items were distributed to the mothers and it was found that the knowledge score of the mothers on burns and its prevention, the mothers had the mean score of 7.68 and SD 1.662 and mean percentage is 25.6 %.

Table 3: Distribution of subjects according to level of knowledge, N=60

Level of Knowledge	Frequency	Percentage
Moderately adequate	23	38.3
Inadequate	10	16.7
Poor	27	45
total	60	100

In the present study it was found that the level of knowledge of the mothers was as follow, about 38.3% of mothers had moderately adequate knowledge on burn and its prevention and about 16.7% of the mothers had inadequate knowledge and 45% of the mothers having poor knowledge.

Table 4: Demographic wise assessment of knowledge, N=60

Demographic variables		N	Mean	SD	Mean %	Significant test
Age	18-25	14	7.93	1.439	26.43	F-TEST=0.433 P=0.651
	26-30	30	7.73	1.617	25.76	
	31-15	16	7.38	1.962	24.0	
Religion	Hindu	36	7.5	1.828	25	F-TEST=0.6 P=0.552
	Muslim	16	7.88	1.204	26.26	
	Christian	08	8.12	1.727	27.06	

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Educational status of mother	Primary	2	5.5	0.707	18.33	F-TEST=1.239 P=0.304
	Middle school	27	7.81	1.711	26.033	
	High school	21	7.67	1.39	25.56	
	PUC	10	7.8	2.044	26	
Occupational status of mothers	Housewife	28	7.43	1.55	24.76	F-TEST=0.907 P=0.409
	Employed	17	8.12	1.453	27.066	
	others	15	7.67	2.059	25.56	
Education of husband	Primary school	23	7.74	1.514	25.8	F-TEST=0.51 P=0.677
	High school	09	7.22	1.481	24.07	
	PUC	13	8.08	1.656	26.93	
	Graduation or above	15	7.53	2.031	25.1	
Occupation of husband	Employed	12	7.75	2.221	25.83	F-TEST=0.027 P=0.973
	Unemployed	30	7.63	1.542	25.43	
	Business	18	7.72	1.526	25.733	
Family monthly income	Rs.2500-3500	09	8.22	1.716	27.4	F-TEST=0.714 P=0.494
	Rs.3501-4500	30	7.7	1.393	25.67	
	Rs.4501 & above	21	7.43	1.989	24.77	
Type of family	Joint	31	7.87	1.821	26.23	F-TEST=0.446 P=0.643
	Nuclear	25	7.52	1.475	25.07	
	Single parent	4	7.25	1.708	24.167	
Type of house	Pucca	14	7.5	1.506	25	F-TEST=0.388 P=0.68
	Semipucca	26	7.58	1.815	25.27	
	kutchcha	20	7.95	1.605	26.5	
Mode of cooking	LPG	09	7	1.732	23.33	F-TEST=3.906 P=0.013
	Electricity	21	7.48	1.721	24.93	
	Kerosene	19	7.42	1.427	24.73	
	Wood	11	9.09	1.221	30.3	

Section III: Association between the selected Demographic variables and the level of knowledge

Demographic variables		N	Level of knowledge			Chi Square
			Moderately adequate	inadequate	poor	
Age	18-25	14	7	1	6	CHI SQUARE VALUE=2.811 P=0.59 NS
			50.0%	7.1 %	42.9 %	
	26-30	30	12	5	13	
			40.0 %	16.7 %	43.3%	
	31-15	16	4	4	8	
			25.0%	25.0%	50.0%	
Religion	Hindu	36	12	7	17	CHI SQUARE VALUE=1.203 P=0.878 NS
			33.3 %	19.4 %	47.2 %	
	Muslim	16	7	2	7	
			43.8 %	12.5 %	43.8 %	
	Christian	08	4	1	3	
			50.0 %	12.5 %	37.5 %	
Educational status of mother	Primary	2	0	0	2	CHI SQUARE VALUE=5.528 P=0.478 NS
			0%	0%	100%	
	Middle school	27	11	5	11	
			14.7 %	18.5 %	14.7 %	
	High school	21	7	5	9	
			33.3 %	23.8 %	42.9 %	
Occupational status of mothers	PUC	10	5	0	5	CHI SQUARE VALUE=7.122 P=0.13 NS
			50.0%	0 %	50.0 %	
	Housewife	28	6	7	15	
			21.4 %	25.0 %	53.6 %	
	Employed	17	9	2	6	
			52.9 %	11.8 %	35.3 %	
Education of husband	others	15	8	1	6	CHI SQUARE VALUE=3.02 P=0.806 NS
			53.3 %	6.7 %	40.0 %	
	Primary school	23	9	5	9	
			39.1 %	21.7 %	39.1 %	
	High school	09	2	2	5	
			22.2 %	22.2 %	55.6 %	
Occupation of husband	PUC	13	6	2	5	CHI SQUARE VALUE=1.373 P=0.849
			46.2 %	15.4 %	38.5 %	
	Graduation or above	15	6	1	8	
			40.0 %	6.7 %	53.3 %	
	Employed	12	5	3	4	
			41.7 %	25.0 %	33.3 %	

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	Unemployed	30	11 36.7 %	5 16.7 %	14 46.7 %	NS
	Business	18	7 38.9 %	2 11.1 %	9 50.0 %	
Family monthly income	Rs.2500-3500	09	4 4.4 %	2 22.2 %	3 33.3 %	CHI SQUARE VALUE=1.094 P=0.895 NS
	Rs.3501-4500	30	10 33.3 %	5 16.7 %	15 50.0 %	
	Rs.4501 & above	21	9 42.9 %	3 14.3 %	9 42.9 %	
Type of family	Joint	31	16 51.6 %	5 16.1 %	10 32.3 %	CHI SQUARE VALUE=5.521 P=0.238 NS
	Nuclear	25	6 24.0 %	4 16.0 %	15 60.0 %	
	Single parent	4	1 25.0 %	1 25.0 %	2 50.0 %	
Type of house	Pucca	14	4 28.6 %	4 28.6 %	6 42.9 %	CHI SQUARE VALUE=2.351 P=0.671 NS
	Semipucca	26	10 38.5 %	4 15.4 %	12 46.2 %	
	kutchcha	20	9 45.0 %	2 10.0 %	9 45.0 %	
Mode of cooking	LPG	09	2 22.2 %	3 33.3 %	4 44.4 %	CHI SQUARE VALUE=12.771 P=0.047 SIGNIFICANT
	Electricity	21	7 33.3 %	3 14.3 %	11 52.4 %	
	Kerosene	19	5 26.3 %	4 21.1 %	10 52.6 %	
	Wood	11	9 81.8 %	0 0 %	2 18.2 %	

It is evident from present study that Chi Square value computed for the age, religion, education status of mother and father, occupation of mother and father, monthly family income, type of family, type of house with the level of knowledge was statistically not significant and mode of cooking was found significant.

Research Hypothesis-2

H₂ there will be a significant association between the knowledge of mothers of under-five with selected demographic variables

Null Hypothesis-2

H₀₂ there was not a significant association between selected knowledge of mothers of under five children with selected demographic variables.

4. Results

The overall knowledge score of mothers under five children regarding burn and its prevention was found that about 38.3% of mothers had moderately adequate knowledge on burn and its prevention and about 16.7% of the mothers had inadequate knowledge and 45% of the mothers having poor knowledge.

5. Recommendation

On the basis of the finding of study following recommendation have been made

- A similar study can be conducted on a large sample to generalize the study finding.

- Mass and individual education in regional language too enlighten the mother can be organized at all the level of health facilities.
- Comparative study may be conducted to find out the similarities or differences in knowledge between rural mothers and the urban mothers.
- An experimental study can also be done in order to see the effect of educational program on the knowledge and practice of the selected population.
- Cross sectional studies can be conducted on the knowledge, attitude, practices of parents regarding burn and its prevention.

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Knowledge of childhood burn risks and burn first aid: Cool Runnings

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ABSTRACT

Aim The high incidence of hot beverage scalds among young children has not changed in the past 15 years, but preventive campaigns have been scarce. A novel approach was used to engage mothers of young children in an app-based hot beverage scald prevention campaign 'Cool Runnings'. This paper provides baseline data for this randomised controlled trial (RCT).

Method Queensland-based mothers aged 18+ years with at least one child aged 5–12 months were recruited via social media to Cool Runnings, which is a two-group, parallel, single-blinded RCT.

Results In total, 498 participants from across Queensland completed the baseline questionnaire. The most common source of burn first aid information was the internet (79%). One-third (33%) correctly identified hot beverage scalds as the leading cause of childhood burns, 43% knew the age group most at risk. While 94% reported they would cool a burn with water, only 10% reported the recommended 20min duration.

After adjusting for all relevant variables, there were two independent predictors of adequate burn first aid knowledge: first aid training in the past year (OR=3.32; 95% CI 1.8 to 6.1) and smoking status (OR=0.17; 95% CI 0.04 to 0.7).

Conclusion In this study, mothers of young children were largely unaware how frequently hot beverage scalds occur and the age group most susceptible to them. Inadequate burn first aid knowledge is prevalent across mothers of young children; there is an urgent and compelling need to improve burn first aid knowledge in this group. Given the high incidence of hot beverage scalds in children aged 6–24 months, it is important to target future burn prevention/first aid campaigns at parents of young children.

Trial registration number ACTRN12616000019404; Pre-results.

BACKGROUND

Hot beverage scalds, like most injuries, are preventable. Yet, these specific injuries have been largely overlooked in injury prevention campaigns, often forming part of broader scald prevention campaigns that tend to focus on hot tap water/bathroom scalds.^{1,2}

In Australia, hot beverage scalds account for 18% of all burns to children—a figure that has remained constant for the past decade.³ Another constant is the poor knowledge of correct burn first aid in the general public.^{4,5} The literature shows that many burn victims, particularly children, receive incorrect or inadequate first aid treatment at the scene, with some receiving no treatment at all.^{6–8} The

continued high incidence of hot beverage scalds and low use of correct burn first aid use lead to unnecessary physical suffering, and for severe scalds, an economic burden to both the family and healthcare system.

The aetiology of hot beverage scalds is well documented, with injuries peaking in children aged 6–24 months, the majority occurring in the child's home, and the most common mechanism being the child pulling a cup of hot liquid down over themselves.^{3,9,10}

The aim of this paper is to (1) assess the current level of knowledge about burn risks and burn first aid in mothers of young children in Queensland, Australia, and (2) to determine factors that predict adequate versus inadequate burn first aid knowledge in this population.

METHODS

Participants in this study are mothers of young children (5–12 months) residing in Queensland, Australia, who enrolled in the Cool Runnings randomised controlled trial (RCT). *Cool Runnings* is a 6-month smartphone application-based hot beverage scald prevention intervention that was developed to improve knowledge about burn risks and burn first aid in mothers of young children,¹¹ given that they are the age group most at risk of hot beverage scalds. The data presented here are the baseline data from the RCT but represent a cross-sectional sample of mothers of young children in Queensland. Detailed methods for this RCT have been previously published in a protocol paper.¹¹ To be eligible for the study, participants were required to be: female, aged 18+ years, resident in Queensland, Australia, with at least one child aged 5–12 months at enrolment and own a smartphone. Participants were recruited via social media, specifically Facebook and Instagram. Participants who met the inclusion criteria were invited to download the Cool Runnings smartphone application (app). Data were collected via the Cool Runnings app.

Data collection

Participants completed a 19-item questionnaire that took 5–8 min to complete. Items included demographic factors (such as education level, age of youngest child, number of children, relationship status and smoking status) and their residential postcode. Postcodes were recoded using Accessibility/Remoteness Index of Australia (ARIA)^{12,13} and Socio-Economic Index for Areas (SEIFA) as measures of social disadvantage.¹⁴ ARIA was developed by the National Centre for the Social Applications



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Original article

Table 1 Primary outcome questions at baseline (source: Burgess *et al*¹¹)

Primary outcome questions	Answer options	Score
Hot beverage scald risk		
What do you think is the main cause of burns/scalds in children aged 0–15 years in Australia?	▶ Bath/taps ▶ Heaters ▶ Hot drinks ▶ Camp fires ▶ Kettle/stove/tops ▶ Hair straightener ▶ Oven doors ▶ BBQs	Correct = 1 Incorrect = 0
What age group do you think is most at risk of receiving this type of burn / scald injury?	▶ Under 2 years ▶ 2–5 years ▶ 6–10 years ▶ 11–15 years	Correct = 1 Incorrect = 0
Burn first aid treatment		
What is the recommended first aid treatment for a burn or scald?	Open-response	Cool running water for 20 min=2 Cool running water (no or incorrect duration)= 1 Other = 0
When someone has a burn it is recommended that you should apply cold running water. Do you know for how long you should apply cold running water? <i>NB: this question was hidden until after the previous question was answered.</i>	▶ 1 – 5 min ▶ 6 – 10 min ▶ 11 – 15 min ▶ 16 – 19 min ▶ 20 min or more	If score 1 on open-ended question above, and got this correct = 0.5

Note: correct response option is italicised.

of Geographic Information Systems into the following categories: major cities, inner/outer regional and remote/very remote.¹² SEIFA is based on aggregate area-level socioeconomic status indicators and was categorised into quintiles (1=most disadvantaged, 5=least disadvantaged).

Knowledge related to hot beverage scald risk awareness and burn first aid knowledge was assessed by four questions (see table 1). Two multiple choice questions were developed to assess hot beverage scald risk and age group risk awareness: (A) main cause of burns/scalds in children aged 0–15 years; and (B) main age group at risk of any burn/scalds. Children aged 0–2 years are the most vulnerable, with more children in this age group admitted to hospital for all causes of burns or scalds. Therefore, if participants choose an incorrect answer for the cause of burn question, they were still able to correctly answer the second question on the age group most at risk from any cause of burn/scald. Two questions (informed by previous studies^{4,5,15}) assessed burn first aid knowledge: one was open ended, and the other was multiple choice. Correct burn first aid knowledge was defined as cool running water for 20 min, based on evidence of benefit.^{16–18} From these four questions, an overall burn knowledge score out of 4 was computed. Details for scoring are shown in table 1. For analyses, the burns first aid score was also categorised into a binary variable: adequate (response of 'cool running water for 20 min' to the open-ended question) versus inadequate (any other response).

Data analysis

Data were analysed using IBM SPSS V.24.¹⁹ Independent samples t-tests (numerical variables) and χ^2 tests (categorical variables) were used to determine whether there were any differences between participants with adequate versus inadequate burns first aid knowledge. Logistic regression was conducted to determine whether there were any significant independent predictors of adequate burn first aid knowledge. Factors assessed in univariate analyses included age, education, marital status, country of birth, age of youngest child, first-time mothers, SEIFA level, ARIA

category, first aid training, previous burn experience and source of burn first aid information. Variables significantly associated with adequate first aid knowledge in univariate analyses were included in a logistic regression model ($P<0.05$). Any variables no longer significant were removed from the model, one at a time, and the impact on the remaining variables was assessed. If no changes to the odds ratios of the other variables beyond 10% were observed, then the variable was removed.

RESULTS

In total, 498 participants from Queensland, Australia, completed the baseline questionnaire.

Demographic features

Sample characteristics are shown in table 2. Almost half (48%) of participants resided in major cities, 42% periurban (inner and outer regional areas) and 10% were from remote/very remote areas. Half (53%) of participants were aged <29 years, 43% were first-time mothers, 55% were married and 20% were current smokers. Education levels varied: approximately equal proportions had completed high school (26%), an advanced diploma/Technical and Further Education (TAFE) certificate (26%) or university/college degree (23%). The majority (84%) of participants were born in Australia; of those born outside Australia, the most common countries of birth were New Zealand (4.6%) and the UK (4.6%). Forty-two per cent of participants reported their youngest child regularly spent time each week in the care of another person; the majority of carers were partners (23%), followed by childcare centres (19%), grandparents (16%), relative/family member (5%) and older sibling (2%).

Overall burn knowledge

Participants' knowledge regarding burns is shown in table 3. The mean overall burn knowledge score was 1.98 ($\pm$ SD=0.89). One-third (33%) of participants responded correctly regarding the leading cause of burns and scalds (hot drinks), while 34%

Table 2 Sample characteristics, by adequate versus inadequate burns first aid knowledge

Sample characteristics	Adequate (n (%))†	Inadequate (n (%))†	Total (n (%))
Age (years)			
18–24	10 (20)	78 (18)	89 (18)
25–29	18 (36)	156 (35)	176 (35)
30–34	14 (28)	145 (33)	161 (32)
35–39	7 (14)	54 (12)	62 (12)
40+	1 (2)	9 (2)	10 (2)
Education			
<Year 12	4 (8)	82 (19)	86 (17)
Year 12 completion	12 (24)	117 (27)	131 (26)
Advanced diploma/TAFE certificate	13 (26)	112 (25)	127 (26)
University degree	13 (26)	99 (22)	112 (23)
Postgraduate	8 (16)	32 (7)	42 (8)
Marital status			
Married	34 (68)	237 (54)	274 (55)
De facto	13 (26)	127 (29)	142 (29)
Single	2 (4)	64 (15)	67 (14)
Divorced/separated	1 (2)	12 (3)	13 (3)
Missing	0	2 (0.5)	2 (0.4)
Smoking status			
Smoker	2 (4)	95 (22)	97 (20)
Non-smoker	48 (96)	347 (78)	395 (80)
Country of birth			
Australia	45 (90)	368 (84)	419 (84)
New Zealand	1 (2)	22 (5)	23 (5)
UK	1 (2)	22 (5)	23 (5)
Other	3 (6)	24 (6)	27 (7)
SEIFA‡			
1 (most disadvantaged)	9 (18)	52 (12)	62 (13)
2	13 (26)	71 (16)	83 (17)
3	9 (18)	101 (23)	110 (22)
4	12 (24)	166 (38)	178 (36)
5 (least disadvantaged)	7 (14)	49 (11)	57 (12)
ARIA§			
Urban (major cities)	22 (44)	212 (48)	238 (48)
Periurban (inner/outer regional)	26 (52)	179 (41)	205 (42)
Remote/very remote	2 (4)	48 (11)	49 (10)
Age of youngest child			
5–6 months	14 (28)	119 (27)	134 (27)
7–8 months	6 (12)	61 (14)	67 (13)
9–10 months	4 (8)	64 (14)	70 (14)
11–12 months	26 (52)	198 (45)	227 (46)
First-time mothers	24 (48)	188 (43)	216 (43)
Child under regular care of another person			
Yes	29 (58)	177 (40)	210 (42)
No	21 (42)	265 (60)	286 (58)
First aid training in past 12 months			
Yes	23 (46)	86 (19)	112 (22)
No	27 (54)	356 (81)	386 (77)
Previous experience with burn			
Yes	26 (52)	210 (47)	238 (48)
No	24 (48)	232 (53)	260 (52)
Source of information regarding burns first aid¶			
Internet	40 (80)	348 (79)	388 (79)

Continued

Table 2 Continued

Sample characteristics	Adequate (n (%))†	Inadequate (n (%))†	Total (n (%))
Family/friends	0	44 (10)	44 (9)
Books	5 (10)	30 (7)	35 (7)
Other	5 (10)	20 (4)	25 (5)

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

†Missing first aid data from six participants excluded.

‡Socioeconomic Index For Areas (SEIFA) was used to estimate socioeconomic status in this study. Specifically, the Index of Relative Socioeconomic Advantage and Disadvantage. Higher deciles reflect higher relative advantage, and lower deciles reflect lower relative advantage. Deciles were reduced to five categories. §Location of usual residence was categorised using Accessibility/Remoteness Index of Australia (ARIA) developed by National Centre for the Social Applications of Geographic Information Systems. Each geographical area was allocated a score between 0 and 15, based on the (road) distance to nearby towns that provide services. Scores were then allocated to the following categories (OESR Queensland, 2011): urban (major city: 0.0–0.2); periurban (inner regional: 0.2–2.4; outer regional: 2.4–5.92); and remote (remote: 5.92–10.53; very remote: 10.53+).

¶Because there are no values in the 'family/friends' category of this variable, no statistical test is valid.

incorrectly selected baths/taps. Forty-four per cent of participants correctly selected children aged 0–2 years as the age group most at risk of burns and scalds, while 54% incorrectly selected children aged 2–5 years.

Burn first aid knowledge

The most common source of burn first aid information was the internet (79%), followed by friends/family (9%), then first aid books (7%). Twenty-three per cent of participants had undertaken first aid training in the past 12 months.

Overall, 94% of participants reported they would use cool/cold water to treat a burn. One in 10 participants gave the correct duration for applying cool running water unprompted, 9% reported the incorrect duration and 74% did not specify a time. Of those who did not report a time for applying water (n=371), 44% provided the correct duration time when prompted with the multiple-choice question. An additional 28% chose '6–10 min' (11–15 min: 15%; 1–5 min: 11%). Of the participants who reported an incorrect duration in the unprompted question (n=43), 21% correctly responded to the prompted multiple-choice question (6–10 min: 44%; 11–15 min: 19%; 1–5 min: 16%). Eight participants (2%) mentioned removing clothing/jewellery from the burn area, while two participants suggested leaving clothes on.

Table 3 Overall knowledge of burn first aid and burn risk factors

Overall burn knowledge (mean (SD))	1.98 (±SD 0.891)
Burn first aid knowledge (n (%))	
Cool running water 20 min—unprompted	50 (10.2)
Cool running water 20 min—prompted	164 (33.3)
Cool running water—incorrect duration	250 (50.8)
Other treatment or unsure	28 (5.7)
Optimal first aid (n (%))	
Adequate (cool running water for 20 min)	50 (10.2)
Inadequate (any other response)	442 (88.8)
Burn risk factors (n (%))	
Correct main cause of burns/scalds in children (hot beverage scalds)	164 (32.9)
Correct age group most at risk (0–2 years)	218 (43.8)

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Burn first aid knowledge was categorised into adequate (cool running water for 20 min in the unprompted question) versus inadequate (any other response). Almost 90% (88.8%; $n=442$) of the sample demonstrated inadequate burn first aid knowledge. As shown in table 2, knowledge of burn first aid was associated with smoking status ($\chi^2=8.68$; $df=1$; $P=0.003$), first aid training the past 12 months ($\chi^2=18.35$; $df=1$; $P<0.001$) and whether the child regularly spent time under the care of someone else ($\chi^2=5.95$; $df=1$; $P=0.015$). No other variables were associated with burn first aid knowledge ($P>0.05$).

Of interest is that among those who had completed first aid training in the past 12 months ($n=109$), 79% demonstrated inadequate burn first aid knowledge. All participants who reported family/friends as their primary source of first aid information demonstrated inadequate burn first aid knowledge. There was no association between previous personal burn/scald experience (of self or child) and adequate burn first aid knowledge (52% adequate vs 47.5% inadequate).

The final logistic regression model comprised only two variables. (While three variables were significant in crude analyses, one variable—whether the child regularly spent time under the care of someone else—was not significant when entered into the final logistic regression model and removing it did not change the remaining ORs more than 10%, so it was not retained). Hence, only two independent predictors of adequate burn first aid knowledge were identified from these data. Mothers with adequate burn first aid knowledge were 3.32 times more likely to have had first aid training in the past 12 months (95% CI 1.8 to 6.1), and 5.98 times more likely to be non-smokers (95% CI 1.4 to 25.2) than mothers with inadequate burn first aid knowledge.

Burn first aid knowledge and burn risk factors

The association between burn first aid knowledge and burn risk factors was also assessed. Half of participants who demonstrated adequate burn first aid knowledge correctly identified hot beverage scalds as the main cause of burns/scalds in children, compared with 31.4% of those with inadequate burn first aid knowledge ($\chi^2=5.95$; $df=1$; $P=0.008$). There was no association between age group most at risk and adequate burn first aid knowledge ($P>0.05$).

DISCUSSION

This study demonstrates mothers of young children are largely unaware how frequently hot beverage scalds occur and the age group most susceptible to them. It also demonstrates an overall gap in knowledge about correct burn first aid treatment.

Burn risk

Most injuries to children under 4 years of age occur in the child's home,²⁰ yet a recent study found that 77% of parents consider their homes to be safer than most.²¹ The majority of hot beverage scalds occur in the child's home, predominantly in the kitchen, and are often witnessed by an adult.³⁻⁵ Lack of supervision is often noted in the literature as a contributing factor to preventable injuries in children.²²⁻²³ However, a previous study by the authors found the majority of hot beverage scalds to children under 36 months occurred when the parent/caregiver was within arm's reach of the child.²⁴

In the current study, two-thirds of participants did not know that hot beverage scalds are the main cause of burns to children, and less than half recognised that children under 2 years are most at risk. The data reported in this study indicate that messages regarding hot beverage scalds as the leading cause of burns to

children and the main age group at risk have not been translated to the relevant target group (mothers of young children), potentially making parents and caregivers of young children less vigilant in keeping hot drinks out of reach around infants and toddlers.

Burn first aid

Preventing hot beverage scalds is one part of the equation, with secondary prevention through correct burn first aid the other. There is strong evidence to show that adequate burn first aid treatment (cool running water for 20 min) applied within 3 hours of the burn occurring has a significant impact on wound healing by reducing burn depth, providing pain relief, faster re-epithelialisation, improved scar management, shorter hospital stays and fewer surgical interventions.^{16-18 25}

The low knowledge of correct burn first aid reported by mothers of young children in this study is consistent with many other studies that show the general public is largely unaware how to treat a burn.^{4 5 8 26} Unprompted, 94% of participants in this study reported using water to treat a burn but only 10% of participants knew to apply it for 20 min. When prompted this increased to 44%. These results are similar to other studies.^{9 25} The general public appear to be unaware of the evidence around applying cool running water for 20 min. This is not surprising given the primary source of first aid information for many parents is the internet. Two studies have looked at the quality of burn first aid information online, and both concur that the information is overwhelmingly inaccurate, inadequate and inconsistent.^{27 28} The inconsistencies are also apparent among global burn advisory agencies,²⁹ which can add to confusion when searching online. It is important that parents and caregivers of young children are aware of correct burn first aid given that most of these injuries occur in the home. For mothers of very young children who are most at risk of hot beverage scalds, education about this simple method of treating a burn should it occur can be empowering.

The Health Belief Model³⁰ suggests that for a behaviour change to succeed, individuals must have the incentive to change, must feel threatened by their current behaviour and must feel that a change will be beneficial.³¹ In terms of preventative efforts by mothers with regard to any burn, prevention strategies must increase their beliefs about their child's risk of a burn injury while simultaneously increasing their competency to intervene or act quickly and appropriately should a burn occur.³²

Raising mothers' awareness of the frequency and severity of hot beverage scalds, and the peak occurrence in children under 2 years, will better prepare them to take preventative measures to keep their child safe.

After adjusting for all relevant variables, the only two independent predictors of adequate burn first aid knowledge were first aid training in the past 12 months and smoking behaviour. In other words, there were no associations between any of the demographic variables such as age of mother, age of child, number of other children, socioeconomic status, education, relationship status and adequate burn first aid knowledge. This highlights that inadequate burn first aid knowledge is prevalent across this target group (mothers of young children) and that there is an urgent and compelling need to improve knowledge of burn first aid in this group.

Also of interest was the finding that previous personal burn/scald experience (of self or child) did not improve burn first aid knowledge. This may indicate an opportunity for intervention to increase knowledge of caregivers of children who experience

a burn in order to prevent future burns. However, the question did not allow for assessment of the severity of the previous burn. It may be that caregivers of children who sustain a burn that is serious enough to seek medical attention already receive such education.

Also of considerable concern is that, while first aid training in the previous 12 months was associated with adequate burn first aid knowledge, a substantial proportion (79%) of mothers who had participated in recent first aid training demonstrated inadequate burn first aid knowledge. Further research is required to explore this.

Limitations

The findings of this study should be interpreted in the context of several limitations. First, participants were recruited via social media. Hence, there is potential for selection bias, and it is possible that the findings cannot be generalised beyond the study population to the target group (mothers of young children in Queensland). However, mothers with young children are the most active on social media,³³ and participants were representative of the target population (women who birthed in Queensland in 2015) with regard to age, marital status, being a first-time mother and country of birth.³⁴ However, participants living in remote and very/remote areas were over-represented (10% vs 3.3% total).³⁵ People who could not understand English are less likely to have participated in this study. The risks are higher for these people,⁶⁷ so in this respect, our findings may be conservative. Second, information was collected via the app on the smartphone, hence there is potential for measurement bias (eg, self-report and/or recall bias). While the questions were mostly demographic, with low potential for measurement bias, there is evidence of underestimation of smoking by self-report³⁶; therefore, additional undeclared smokers may have been included.

What is already known on the subject

- Hot beverage scalds are the leading cause of burns in children.
- The burden of hot beverage scalds goes beyond the physical suffering of the child; the financial and psychological burden can also be significant.
- Applying correct burn first aid (20 min cool running water) within 3 hours of a burn occurring can significantly improve injury outcomes.

What this study adds

- Mothers of young children are largely unaware of the frequency and severity of hot beverage scalds.
- There is a very low level of correct burn first aid knowledge among mothers of young children, with very few independent predictive factors. Inadequate burn first aid knowledge is prevalent across this target group. There is an urgent and compelling need to improve knowledge of burns first aid in mothers of young children generally.
- The primary source of information for burns first aid is the internet.

CONCLUSION

Mothers of young children appear largely unaware of the frequency with which hot drink scalds occur in children under 2 years of age and overall demonstrate inadequate knowledge of burns first aid. Increasing their knowledge and awareness about the risks associated with these injuries is crucial so they can take preventative actions. Interventions aimed at preventing these scalds should also include a burn first aid component. After adjusting for all relevant variables, the only two independent predictors of adequate burn first aid knowledge were first aid training in the past 12 months and smoking behaviour. This highlights that inadequate burn first aid knowledge is prevalent across this target group (mothers of young children) and that there is an urgent and compelling need to improve knowledge of burns first aid in this group generally. As demonstrated in this and many other studies, knowledge of correct burn first aid is lacking. Equipping mothers, parents and caregivers of young children with this information will lead to improved injury outcomes should a burn/scald injury occur.

Contributors We confirm that all authors have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content and (3) final approval of the version to be submitted.

Competing interests None declared.

Ethics approval This study was approved by the University of Queensland Institutional Human Research Ethics Committee (approval number: 2015001652).

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