Factors associated with the implementation of COVID-19 health protocols among Indonesian older adults living in rural areas: A cross-sectional study

by Nurul Maurida

Factors associated with the implementation of COVID-19 health protocols among Indonesian older adults living in rural areas: A cross-sectional study

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ABSTRACT

Introduction: Implementing health protocols was mandatory during the COVID-19 pandemic. However, it became challenges for older adults living in rural areas. This study aimed to analyze the factors influencing implementation of COVID-19 health protocols among elderly in rural areas based on the Theory of Planned Behaviour (TPB).

Methods: This study used an explanatory survey with cross sectional approach. The sample consisted of 100 older adults who resided in rural areas. Data were collected using the TPB questionnaire and COVID-19 health protocol questionnaire, both have 21 items. The data were analyzed using bivariate and multivariate analysis. Bivariate analysis used pearson correlation, chi-square test, fisher's exact test. Multivariate analysis used multiple linear regression with a level of significance = 0.05. The independent variables were attitude toward behaviour, subjective norm and perceived behavioural control while the dependent variable was the implementation of COVID-19 health protocols.

Results: Gender ($p<0.001$), age ($p<0.001$), employment status ($p<0.001$), attitude toward behaviour ($p<0.001$) , subjective norm ($p<0.001$) and perceived behavioural control ($p<0001$) were significantly association on the implementation of COVID-19 health protocols, while education level ($p>0.001$) was not significantly association on the implementation. The R-square shows 0.610 which indicates that TPB model can predicted 61% on implementation of COVID-19 health protocols

Conclusions: The most dominant factor in increasing the implementation of the COVID-19 health protocol is attitude toward behaviour. Nurse need to provide education to elderly and their family to increase the implementation of COVID-19 health protocols as roles of transmition COVID-19 to the elderly.

KEYWORDS

Attitude; COVID-19; elderly; perceived behavioural control; subjective norm; theory of planned behavior

INTRODUCTION

Coronavirus Disease (COVID-19) is an infectious disease that has been affecting many countries globally since the late-2019. Indonesia reported its first positive COVID-19 case on March 2, 2020 (Melia, Triana and Prasetyo, 2020). This disease can infect humans of all ages, including the elderly. The elderly population is a priority population in preventing the transmission of COVID-19 (Géa *et al.*, 2022). The COVID-19 patients aged 60 years and over have a higher mortality compared to patients younger patients (Karadavut and Altintop, 2022). Elderly with comorbidities such as heart disease, diabetes mellitus, hypertension, chronic kidney failure and

chronic lung disease have a greater risk of infected COVID-19 compared to the same population without comorbidities (Tobing and Wulandari, 2021; Ventura, Molinelli and Barranco, 2021).

Implementing health protocols is one of factors to prevent the transmission of COVID-19. In Indonesia, and many countries, the protocols consist of wearing a mask, avoiding crowds, keeping a distance and implementing clean and healthy lifestyles (Ministry of Health, Republic of Indonesia, 2020).The protocols need to be implemented by all population groups including the elderly regardless of the residence, both rural and urban. In rural areas, people tend to have more difficult access to health services and receive information (Dr. Murdiyanto, 2020), specially information about COVID-19 (Cahyawati, Lestarini and Saniathi, 2021). Consequently, people living in rural areas will be more likely to have different perceptions and beliefs about the pandemic situation compared to those living urban areas, which results in the low compliance to health protocols (Benu, Febriyanti and Tahu, 2022).

By January 2022, the number of confirmed positive cases for COVID-19 globally was more than 200 million and five million people have died (Murri *et al.*, 2022). In Indonesia, confirmed COVID-19 patients in Indonesia in August 2021 were 426,1759 people and until Maret 2022 were 5.939.082 people (Zakiah and Pujiati, 2022) . The COVID-19 case in East Java is 399,989. The highest case of death occurred in patients aged >60 years. The case fatality rate (CFR) in patients aged 60 years and over was 12.06% (Rubina *et al.*, 2022). The data show that the elderly need more protection in preventing the transmission of the disease.

The elderly as a vulnerable group have a higher mortality rate. This showes that the elderly need to protect themselves. Changes that occur among elderly cause the elderly to be less disciplined in implementing COVID-19 health protocols (Kristamuliana, Renteng and Datu, 2021). Information that is less than optimal for the elderly in rural areas is also make negative perceptions the elderly in implementing of COVID-19 health protocol (Nur, 2021). A good perception can reduce the risk of the elderly from transmission of COVID-19 because roles efforts by doing the COVID-19 roles are done in a disciplined manner (Prihati *et al*. 2020).

The Indonesian government has done socialization the implementation of COVID-19 health protocols. There has been a lot of research on the implementation of the COVID-19 health protocol in the Indonesian people. The majority have the same conclusion that doing the COVID-19 roles in low category (Daoust, 2020). A research explains that the factors influencing doing the COVID-19 roles are economic problems, indifferent attitude, vulnerability to the COVID-19 virus and distrust of the government with many inconsistent policies (Sari, 2021). Other research explains that the factors influencing doing the COVID-19 roles in the community are the status of the community's reaction in a pandemic situation, the perception of the effectiveness of self-quarantine, the level of concern about their vulnerability, gender, educational status, marital status, health status and age. People who are married, have a good educational background, and a younger age have a higher level doing the COVID-19 roles than people who are older (Riyadi and Larasaty, 2021). This is in accordance with the results of the study which explained that the majority of the elderly in rural areas had the implementation of the COVID-19 health protocol in the low category (Daoust, 2020). However, no one research has identified the factors that influence doing the COVID-19 roles, especially for the elderly in rural areas.

The implementation of the COVID-19 health protocol is a behaviour to prevent the transmission of COVID-19. Ogilvie *et al.*, (2016) explain that behaviour is formed by perceptions and beliefs. One theory that explains the behaviour is the theory of planned behaviour (TPB). TPB explain that behaviour is influenced by attitudes towards behaviour, subjective norms, and perceived behavioural control. The implementation of COVID-19 health protocol is a form of behaviour that needs to be developed. TPB has analyzed a lot of behaviour and has been successful in changing behaviour from negative to positive. A research explains that TPB is able to improve the behaviour of early detection of cervical cancer in women (Maurida, Sukartini and Indarwati, 2019), the background for changes in cataract surgery decisions (Wikamorys and Rochmach, 2017), and improve care adherence in diabetes mellitus clients (Lestarina, 2018). However, there is no research that uses TPB as a theoretical basis in analyzing the implementation of the COVID-19 health protocol for the elderly in rural areas. Because of that, the researcher want to analysis the factors that influence on COVID-19 roles.

MATERIALS AND METHODS

Design

This study use analytical observational with cross sectional approach. The study was conducted in August 2021 in one of rural areas in East Java Province, Indonesia. Perceived behavioural cntrol, attitudes toward behaviour, and subjective norm were independent variables. The dependent variable was the implementation of COVID-19 health protocols.

Participants

The population of this study was the elderly aged 60 years and over. The total population in the study site was 7,949 people selected using quota sampling. After calculating the Slovin's formula with a confidence level of 0.1, it was determined that the sample size was 100 respondents. The study only included the elderly who were able to do activity daily living independently. The study excluded the elderly who had psychological problems or dementia.

Instruments

The study instruments were questionnaires consisting of demographic data, the TPB and the COVID-19 health protocol questionnaires. The TPB questionnaire was self-developed based on the TPB concept, consisting of attitudes towards behaviour (6 questions), subjective norms (6 questions) and perceived behavioural control (9 questions; Table 1). The TPB questionnaire used closed questions with a 4-item Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree).. Unfavorable questions were in questions number 10, 13,17,18,20. Unfavorable questions have different likert scale that is (4 = strongly disagree, 3 = disagree, 2 = agree, and 1 = strongly agree). The categorization of the data results is divided good category and poor category with the distribution based on the mean. A value less than the mean is included in poor category dan a value more than the mean included in good category.

The COVID-19 health protocol questionnaire was taken from the COVID-19 roles and control guidelines issued by the Ministry of Health of the Republic of Indonesia, 5th Revision (Ministry of Health, Republic of Indonesia, 2020). The dependent variable consisted of wearing a mask, avoiding crowds, keeping a distance and implementing clean and healthy lifestyles. The questionnaire had 21 items of closed questions with the answer choices on a 4-item Likert scale (1 = never, 2 = sometimes, 3 = often, 4 = always) (Ministry of Health, Republic of Indonesia, 2020). The categorization of the data results is divided good category and poor category with the distribution based on the mean. A value less than the mean is included in poor category dan a value more than the mean included in good category.

All research instruments were considered valid and reliable. The validity was measured using Pearson's product moment and the reliability test was Cronbach's alpha. The validity and reliability tests were delivered to 25 respondents who were not the study respondents. The results of the validity test showed that all items had a significance level of < 0.05 and r-count > 0.396. The reliability test showed that all questionnaires had Cronbach's alpha > 0.65; the TPB questionnaire (Cronbach's alpha = 0.874) and the COVID-19 health protocol questionnaire (Cronbach's alpha = 0. 958).

Data Collection

Data collection is carried out by enumerators who have shared perceptions with the investigators so that there was no interference by the investigators during the data collection process to reduce bias. The data collection procedures were conducted through several steps. First, the enumerators contacted the respondent and explained about the research. Second, the enumerators provided an explanation of the study protocol to the respondents, especially about the study purpose, benefits and voluntary participation. Third, the enumerators asked the elderly about their willingness to be the research respondent and signing an informed consent. Fourth, the enumerators delivered the questionnaires to the respondents. The enumerators provided explanation regarding the questionnaires if the respondent did not understand its meaning.

Data Analysis

Coding was carried out after the questionnaire were filled out by the respondents. The coded data were processed using SPSS 20 software. The data were analysed using bivariate analysis and

multivariate analysis. Bivariate analysis used pearson correlation, Chi square test and fisher's exact test. Chi square test and fisher's exact test were used to analyze the correlation between demografic data (gender, age, employment status and educational level) on implementation of COVID-19 helath protocols. Pearson correlation was used to analyze the correlation among TPB variable on implementation of COVID-19 health protocols. Multivariate analysis used multiple linear regression with significance value 0.05. It is used to identify how much influence TPB variable on implementation of COVID-19 health protocols.

Ethical Consideration

The Health Research Ethics Committee of dr. Soebandi University had been given ethical approval to this research by number No. 200/UDS/VII/2021.

RESULTS

The demographic characteristic showed that the majority of respondent were women (67.0%) and most of them have good category on implementation of COVID-19 health protocols (71.6%). Most of respondent aged 60-70 years old (78.0%) and majority of them have poor category on implementation of COVID-19 health protocols (62.8%). Most respondents were unemployed (61.0%) and most of them have poor category on implementation of COVID-19 health protocols (54.1%). Most respondents were uneducated (55.0%) and most of them have good category on implementation of COVID-19 health protocols (71.6%). Most of respondent aged 60-70 years old (50.9%). The bivariate correlation between demographic characterictic on doing the COVID-19 roles showed that gender (p < 0.001), age (p < 0.001) and employement status (p< 0.001) has affected on doing the COVID-19 roles. While educational level has no affected on implementation of COVID-19 health protocols (p = 1.000) (Table 2).

The attitude toward behaviour had maximum score of 24, mean 19.80 and SD 2.13. It means that there are respondent who get maximum score for this variable. The subjective norm had a maximum score of 22, mean 18.50 and SD 1.35. The perceived behavioural control had maximum score 36, mean 29.02 and SD 2.23 which means that elderly were in the range "agree" and "disagree" The implementation of COVID-19 health protocol had maximum score 81, mean 62.80 and SD 14.3 which means that the elderly were in the range of "always" and "often". The bivariate analysis among TPB construct showed that attitude toward behaviour (r= 0.751 and p < 0.001), subjective norm (r = 0.716 and p < 0.001) and perceived behavioural control (r= 0.523 and p < 0.001) has association on implementation of COVID-19 health protocols. The relationship between attitudes toward behaviour and the implementation of COVID-19 health protocols is in the category of very strong correlation (r > 0.75). The relationship between subjectiv norms and the implementation of health care is in the category of strong correlation, as well as the relationship between perceived behavioral control and the implementation of the protocol (r = 0.50-0.75). The regression equation formed through this study is 'implementation of the COVID-19 health protocol among elderly in rural areas = -60.864 + 3.552 attitudes + 3.820 subjective norms – 0.620 perceived behavioural control' (Table 3)

The results of multiple linear regression showed that the variable attitude toward behavior (t= 4365, p < 0.001) and subjective norm (t = 3.298, p < 0.001) had a partial influence on the implementation of the COVID-19 health protocol. Perceived behavioral control (t= -1,000, p = 0.320) had no partial effect on the doing the COVID-19 roles. This explains that if the attitude toward behaviour and subjective norm have high value so the implementation of COVID-19 health protocols become more higher. Otherwise, if the perceived behavioural control have high value so the implementation of COVID-19 more lower. The dominant factor that has the most influence on the doing the COVID-19 roles is attitude toward behavior because it has a standard coefficient beta value of 0.530 which is greater than the other variables (Table 4). The model summary showed that The R-square 0.610 which indicates that the strength of the relationship between the indepedent variables on the dependent variable was 61%, while the remaining 39% is explained by other factors. The F-test result showed that the p-value < 0.001 with F-value was 50,052 greater than the F-table (F-table = 2.70). This means that there is a simultaneous influence between attitudes toward behaviour, subjective norms and perceived behavioural control on the implementation of COVID-19 health protocols among elderly in rural areas (Table 5).

DISCUSSION

Demografic characteristic on implementation of COVID-19 health protocol

There was association between gender, age and employement status on implementation of COVID-19 health protocols. The majority of women respondents was implementation the COVID-19 health protocol in good category, while the majority of male elderly respondents did not. This is in line with the results of research that women's compliance in implemented of the COVID-19 health protocol is better than that of men (Riyadi and Larasaty, 2021). Elderly women in rural areas have a better concern for health than elderly men in rural areas. This is also related to the dominant role in maintaining health in the family. Women have a role to protect the whole family, from regulating diet, maintaining cleanliness and modifying the home environment. Some respondents in elderly category (60-70 years old) have good category and others have poor category on implementation of COVID-19 health protocols. All of respondent was 70-80 years old and more than 80 years old have good cathegory. This is accordance with research which showed that the people who more mature, they will have opportunity to perform the expected behavior (Ringroad, Daya and Tamantirto, 2016). The older have more life experience. The elderly will more care about their health. In addition, families with the elderly in rural areas will pay more attention to their family members in improving their health. Families are more protective in regulating the lifestyle of the elderly with old age. All respondents as pension have good category in implementation of COVID-19 health protocols. This is contrary to research which showed that employement status was not related on implementation of the COVID-19 health protocol (Niruri *et al.*, 2021). All the elderly who have their own business need cooperation with other people so that the health protocol becomes difficult to implemented. Work which includes farm laborers and gardeners, which must be carried out in cooperation with others. The results of this study explain that there is no relationship between education level on implementation of the COVID-19 health protocols. This is contrary to research which showed that educational level was related on implementation of the COVID-19 health protocol (Riyadi and Larasaty, 2021). Educational level does not fully influence individual knowledge in shaping attitudes. The majority of respondents do not have education, but the village government continues to make efforts to increase the knowledge of residents including the elderly about the COVID-19 health protocol

Attitude toward behaviour on implementation of COVID-19 health protocols

There was an influence of attitude toward behaviour and subjective norm on the implementation of COVID-19 health protocols among elderly in rural areas. The perceived behavioural control has no influence on the implementation of the COVID-19 health protocol among elderly in rural areas. Attitudes are formed from beliefs about behavior and the consequences. The elderly who have belief that implementing the COVID-19 health protocol during a pandemic can prevent them from transmission of COVID-19, they will have a good attitude. A good attitude causes the expected behavior to be formed, that is the implementation of the COVID-19 health protocols including wearing a mask, avoiding crowds, keeping a distance and implementing clean and healthy lifestyles. This is in accordance with the results of the study which concluded that a positive attitude could affect the use of masks during COVID-19 (Pan and Liu, 2022). The belief in doing something for the elderly in rural areas is based on the sociodemographic characteristics of the individual and the socio-cultural impact from their interactions in community (Watson and Austin, 2021).

The beliefs of the elderly in rural areas are formed from the information received by the elderly. Knowledge is a basic factor in the formation of beliefs (Simanjorang *et al.*, 2022). The village government provides intensive information to the community including the elderly about the implementation of the COVID-19 health protocols as an effort to prevent the transmission of COVID-19. Information on preventing the transmission of COVID-19 through the implementation of health protocols has been comprehensive in rural areas through health education by health workers through billboards or posters. A study explains that billboards and banners are media types that are considered effective for informing the roles of COVID-19 in rural areas (Badri, 2020). This also shows that health workers in rural areas have optimal performance in improving health services especially for the elderly (He and Tang, 2021). The government give more attention to activities to prevent the transmission of COVID-19. The government moves all its units to the lowest unit, that

is village. This requires the village government, including stakeholders, to apply all policies that have been set by the central government, including in socializing the implementation of the COVID-19 health protocol and collaboration between sectors and across sectors. This activity has an impact on increasing public knowledge, especially the elderly in rural areas

Subjective norm on implementation of COVID-19 health protocols

Subjective norms affect the implementation of the COVID-19 health protocol among elderly in rural areas. Subjective norms are formed by individual's perception of the beliefs of the closets people. In rural areas, the family is the closets person for the elderly. They tend to follow the directions given by the family compared to other. Families provide support in caring for the elderly, one of which is doing activities that prevent the elderly from transmission of COVID-19. This is in accordance with the results of the study which concluded that the family has a role in health care for the elderly who live with their family (Zulf, Sabrian and Herlina, 2019). Therefore, the family belief about preventing the transmission of COVID-19 by implementing a health protocol makes the elderly has the same belief as their families (Nugraha, 2020). Family need to increase their knowledge in caring for elderly. The increased family knowledge has had an impact on change in their belief and formed good subjective norm for elderly (Badriah *et al.*, 2021).

Functional aspects of family support include the type or nature of family support and can be classified into 4 domain : instrumental support, emotional support, informational support and social integration. In rural areas, elderly are individuals who need protection and supervision from the family, so they can do anything to keep the elderly still health (Yuan *et al.*, 2011). Subjective norm are also influenced by peer and health worker. Behavior change in the elderly is influenced by peer support. Elderly tend to do something if they get support from their peers (Raue *et al.*, 2015). A good relationship between nurses and the elderly is well established. This will have an impact on improving the quality of therapeutics so as to achieve successful implementation carried out by nurses (Happ and Raderstorf, 2019). The elderly are a vulnerable group. Families in rural areas belief that the elderly are individuals who have more life experience so they are more wiser than others. Therefore, families with the elderly in rural areas will strive to maintain the health of the elderly, especially keeping the elderly from being infected with COVID-19

Perceived behavioural control on implementation of COVID-19 health protocols

There are relationship between perceived behavioural control and implementation of the COVID-19 health protocol in the elderly in rural areas. This is in line with other study which explain that perceptions of behavioral control affect behavior (Sin and Rochelle, 2022).Perceived behavioural control is formed from the individual's perception of support or obstacles. The influence formed by subjective attitudes and norms still needs to be strengthened with the support of the social environment to improve the implementation of the COVID-19 health protocol for the elderly in rural areas. Impact of perceived behavioural control actually depends on the factors determining behavior such as access to information, access to health services, self efficacy, availability of materials, financial and time (Zhang *et al.*, 2021). A sense of togetherness and cooperation is still entrenched in people in rural areas, including the elderly in east java (Windarwati *et al.*, 2020). This is an inhibiting factor in the elderly limiting interaction with other people (Utomo *et al.*, 2019). Changes that occur in the elderly because the aging process makes the elderly unable to make decisions on their own without assistance (Chen, Dai and Xia, 2022). Perceived behavioral control is individual perceptions of assessing barriers to behavior. The perception is about self-efficacy, self-awareness, time availability, access, infrastructure and individual financial conditions in implementing the COVID-19 health protocol. Some of the elderly in rural areas still work to meet their daily needs. Its makes the elderly difficulty to implementation the COVID-19 health protocol, especially in the aspect of staying away from crowds. The work that is mostly done by the elderly in rural areas is as farm laborers or garden workers. That is make the elderly do work in groups. The majority of the educational background of the elderly in rural areas are not attend school. Its causes the elderly have low self-efficacy and self-awareness about their vulnerability to contracting COVID-19 and their belief in implementing the COVID-19 health protocol is still low. However, efforts to increase knowledge carried out by the village government by emphasizing policies that compel and bind the community to implement of COVID-19 health protocols have caused the elderly in rural areas to be able to override perceived barriers and implement of COVID-19 health protocols.

Affect attitude toward behaviour, subjective norm and perceived behavioural control on implementation of COVID-19 health protocols

perceived behavioural control, attitude toward behaviour, subjective norm had simultaneous effect on implementation of COVID-19 health protocols among elderly in rural areas. Behavioural intention can changed by increase the perceived behavioural control, attitude toward behaviour, subjective norm (Watson and Austin, 2021). Attitudes towards behaviour, subjective norms, and perceived behavioral control have a strong relationship in conducting analyzes to change behavior in individuals. The elderly in rural areas are a minority group and tend to have homogeneous characteristics and uphold the local culture. Good knowledge is the background for the formation of beliefs in implementing behaviour. However, the existing belief needs to get support from family, health workers, peers even in terms of availability of time, infrastructure, and the financial condition of the elderly.

Limitations

There are some limitations of this research. The number of respondents as many as 100 elderly. This can be improved to describe the real condition. Characteristic demographics were not included in the multivariate analysis because the scale was categorical and not a dichotomous table. Questonare was used to collecting the data , sometimes this way do not show the opinion of respondents who actually, this happens because a lot of sample, some of them are honesty factor in filling respondents' opinions in the questionnaire. Respondents have different educational backgrounds. This will have an impact on the respondent's level of knowledge in determining attitudes that did not identify on this research. The pandemic situation at the time of the study showed an increasing fluctuation in transmission. The situation at the time of the study could affect the results of similar studies

CONCLUSIONS

TPB construct and demografic characteristic such as gender, age and employment status have influence on the implementation of the COVID-19 health protocols among elderly in rural areas. The most dominant factor in increasing the implementation of the COVID-19 health protocol is attitude toward behaviour. Based on the research above, it is necessary to improve attitudes, subjective norms and perceived behavioural control among elderly in rural areas to improve the implementation of the COVID-19 health protocol by increasing perceptions and beliefs of the elderly in implementing the COVID-19 health protocols, which will be in line with increasing knowledge of the elderly. This can be done use counseling methode or health education by involving the elderly group. Health workers need to work together with stakeholders in rural areas, including culture figure or religious leaders, to increase the perceptions and belief of the elderly in implementing the COVID-19 health protocol. Besides that, there is a need for family involvement to make good family support in preventing the transmission of COVID-19 in the elderly in rural areas. Recommendation for further research is to use knowledge variables in identifying factors that influence the implementation of the covid-19 protocol
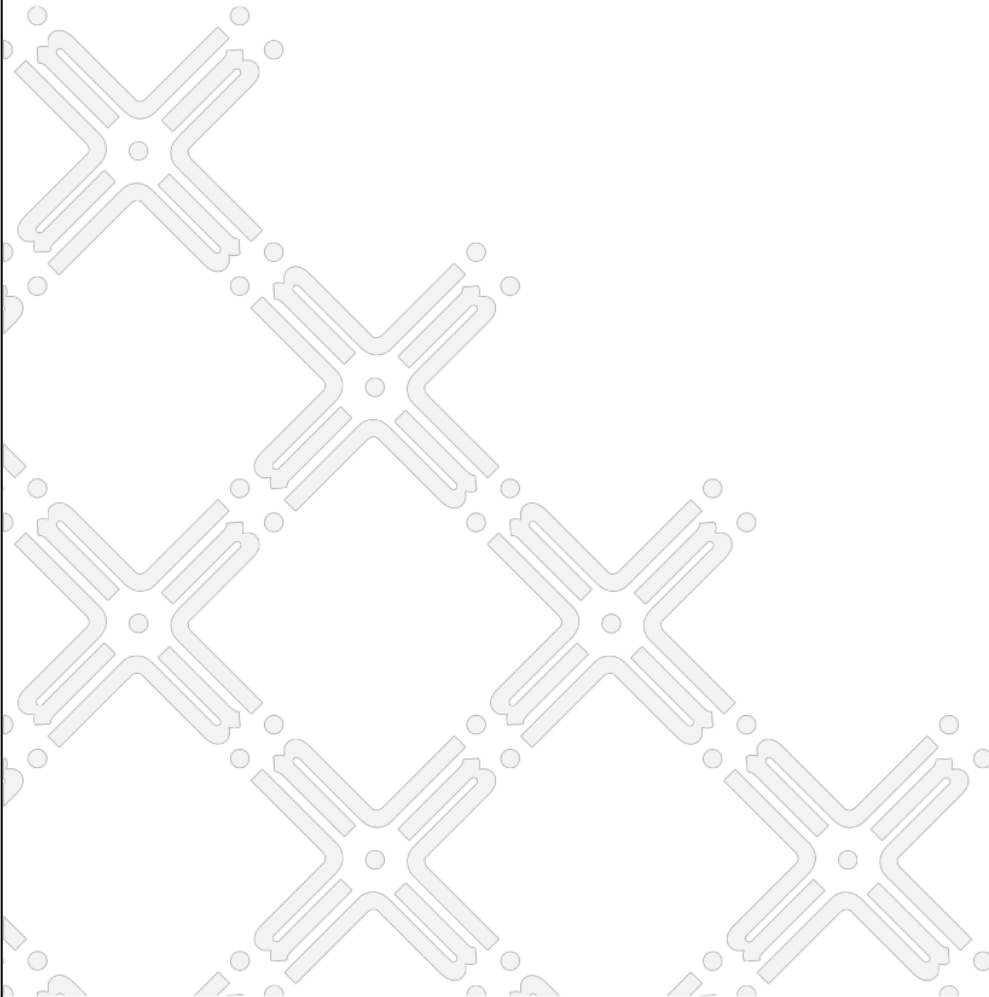
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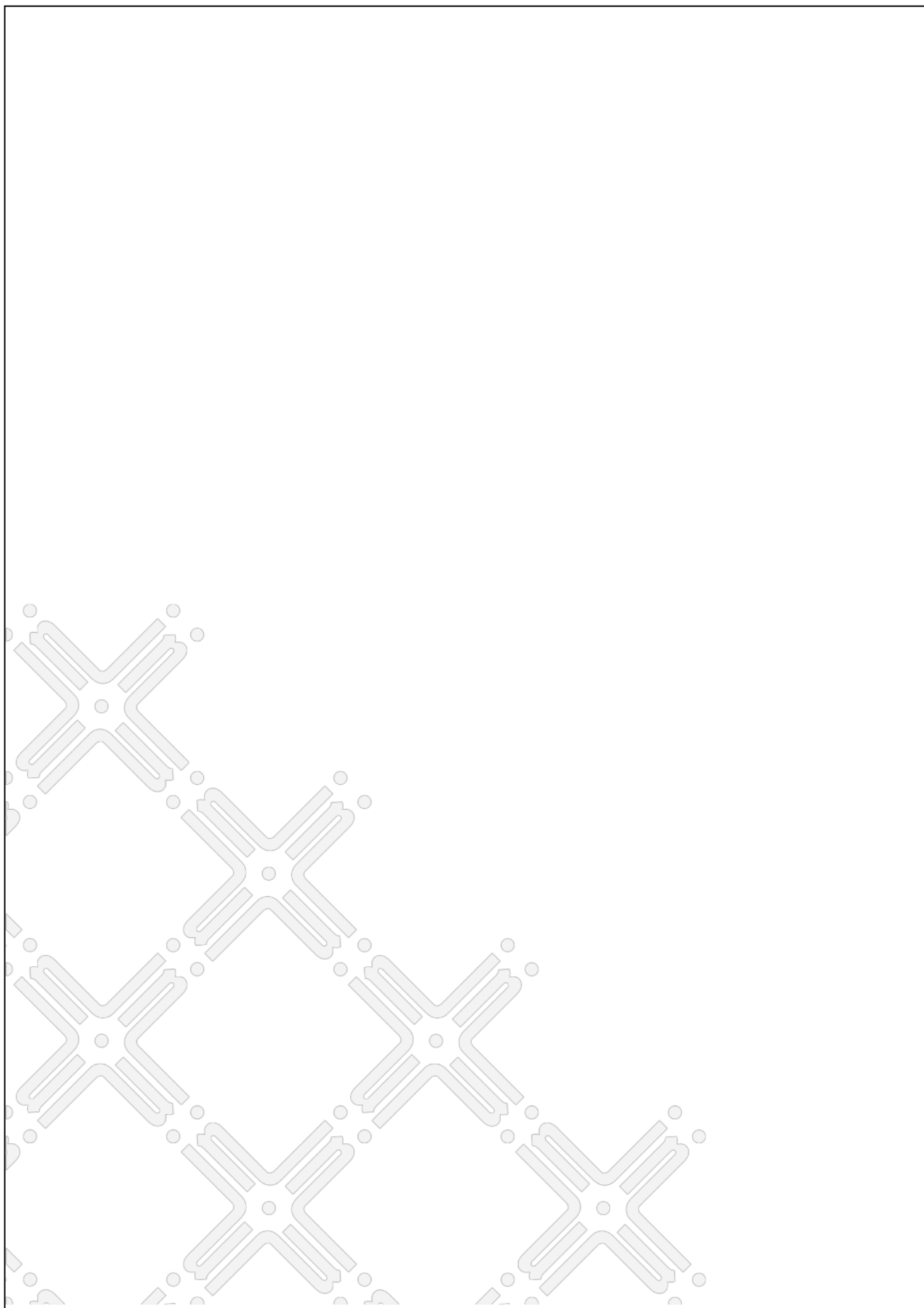
There is no conflict of interest.

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