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Factors Related to Family Health Behavior in Samosir District: A Mix-Methods Study

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Abstract

BACKGROUND: Non-communicable and communicable diseases remain a problem in Indonesia, where both are closely related to unhealthy behavior. In recent years, the prevalence of acute respiratory infection, diarrhea, diabetes mellitus, hypertension, and stroke has increased significantly, becoming the leading cause of death. Family health behavior affects the health status of the family and community.

AIM: The study aims to examine factors related to family health behavior in the Samosir district.

METHODS: This study used a mixed-method approach with an explanatory sequential design. The respondents were 187 families who were selected through multistage random sampling. In-depth interviews were conducted with six informants: Samosir Health Department staff, Community Health Center staff, and religious or community leaders. The study was conducted in ten villages across three subdistricts. The instrument passed the validity and reliability tests and met triangulation. The Ethics Committee of the Faculty of Public Health, Universitas Indonesia, has approved ethical clearance. Univariate and multivariate analysis with logistic regression (CI 95%) was used for quantitative data, while content analysis was used for qualitative data.

RESULTS: In the Samosir district, family health behavior (consisting of eating vegetables and fruits, not smoking at home, washing hands with soap and water, and using clean water) was low (12.8 %). According to multivariate analysis, attitudes, income, and affordability of health-care facilities all significantly correlate with family health behavior. In content analysis, attitudes, economy, community characteristics, infrastructure, and access were discovered to be related to family health behavior.

CONCLUSIONS: Health promotion strategies such as health education, community empowerment, and cross-sectoral collaboration must be thoroughly implemented to address factors related to family health behavior because they can increase family health behavior through family empowerment.

Introduction

The current disease trends are dominated by non-communicable diseases such as hypertension, heart disease, diabetes, cancer, and obstructive pulmonary disease. According to the World Health Organization (WHO), non-communicable diseases (NCD) kill 41 million people worldwide each year, accounting for 71% of all deaths. Every year, 15 million people aged 30–69 die from an NCD; more than 85% of these "premature" deaths occur in low and middle-income countries [1]. Poor diets, physical inactivity, alcohol consumption, and tobacco use increase the chance of dying from NCD.

In Indonesia, communicable diseases and NCD are still a concern, as both are closely related to unhealthy behavior. In recent years, there has been a significant rise in the prevalence of several communicable and NCD in Indonesia, including acute respiratory infection which increased from 19.3% in 2013 to 26.5% in 2018, and diarrhea which increased from 4.5% in 2013 to 25% in 2018, diabetes mellitus which increased from 6.9% in 2013 to 10.9% in 2018, hypertension which increased from 25.8% in 2013 to 34.1% in 2018, and stroke which increased from 7.7% in 2013 to 10.9 per mil in 2018 [2]. Furthermore, it is recognized that cardiovascular disease and diabetes, as well as chronic obstructive pulmonary disease, account for 61% of all deaths in Indonesia (COPD) [2]. This causes Indonesia to have a double burden of disease. In response, health development is carried out to increase everyone's willingness, awareness, and ability to live a healthy lifestyle to the highest level of public health potential [3].

According to the Basic Health Research (Riskesdas) of the Ministry of Health of the Republic of Indonesia in 2013, the proportion of households with family health behavior was rated as low at 14.7% in Samosir District, compared to the achievement of North Sumatra province at 24.6% and national achievement at 32.3% [4]. This family health behavior is still far short of the national goal of 80% of families engaging in healthy behavior (PHBS). This study looked at four

behaviors with a 50% success rate in the Samosir District; consumption of vegetables and fruits (6.5%), not smoking in the house (18.9%), washing hands with water and soap (44.8%), and consumption of clean water (50%) [4]. Human behavior is complex and complicated.

According to Green and Kreuter, behavior is influenced by predisposing factors (knowledge, attitude, level of education, economics, and socioculture), enabling factors (the availability and affordability of healthcare, health costs, commitment to health, and health-related skills), and reinforcing factors (social support, attitudes and behavior of health workers, and existing policies or rules) [5]. To understand the behavior and determinants that influence it, the behavior must be seen from an environmental perspective. The following are the five principles of the ecological perspective on health behavior: (a) There will be various levels of impact on health behaviors, (b) environmental contexts are important predictors of health behaviors, (c) behavior influences are involved at multiple levels, (d) ecological models should be behavior specific, and (e) multilevel interventions are expected to become the most effective at behavioral change [6].

Upstream effects include healthcare, economic stability, education, social and community context, and neighborhood and built environment – all of which are called social factors related to health and could be the most powerful factor [7]. The previous study by Lazzarino *et al*. suggested that low socioeconomic status was related to unhealthy behavior in respondents in Thailand and the United Kingdom [8]. The other study revealed that education level, income level, gender, culture, and circumstances are associated with fruit and vegetable consumption, as well as smoking [9]. This study focuses on six factors related to family health behavior: knowledge, attitudes, income, availability and affordability, information exposure, support from community or religious leaders, and support from health workers.

Aim

The study aims to examine the factors related to family health behavior in the Samosir district.

Methods

Study design

The study used a mixed-method approach with an explanatory sequential design. It is a mixed-methods study in which the findings of quantitative research are explained and explored alongside the findings of qualitative research to gain a more in-depth understanding of the findings [10]. A cross-sectional design was used for the quantitative study. The qualitative study was used to explore and supplement the quantitative study. The research was carried out from May to June 2016 in ten villages spread across three sub-districts.

Participants

The population in this study consisted of all households (families) in the three selected subdistricts in the Samosir district, namely, Pangururan, Ronggur Nihuta, and Simanindo, for a total of 13,969 households. After choosing a sub-district, choose 3–4 villages at random from each sub-district. The villages that became the research area were: Pardomuan 1, Parlondut, Lumban suhi-suhi, Simarmata, Dosroha, Sihusapi, Saganan Nihuta, Paraduan, Lintong Nihuta, and Ronggur Nihuta. The final step is to select the family that meets the inclusion criteria as respondents.

The families represented by the mother who met the inclusion criteria are nuclear families made up of a father and a mother with or without children (first child under the age of ten). Mothers are considered to represent the family because mothers play a significant role in the four behaviors studied, and the healthy behavior of children aged 10 years is still heavily influenced by their mothers' healthy behavior. The sample size was determined using Lameshow's different proportion test. The respondents were 187 families chosen through multistage random sampling.

Six informants were interviewed in depth: Samosir Health Department personnel, Community Health Center (Puskesmas) personnel from three subdistricts, and religious or community leaders from two subdistricts.

Instruments

The instrument included a questionnaire as well as interview guidelines. The authors created the questionnaire based on theory and guidelines for family health behavior. The Validity and Reliability test had previously administered a questionnaire to 30 respondents on May 5, 2016, at Cikeas Udik Village, Bogor District. The seven variables yielded 64 valid questions: Behavior, knowledge, attitude, availability and affordability, information exposure, support from community leaders, and support for health workers. Cronbach Alpha ranges from 0.64 to 0.755 for all variables. In conducting interviews with informants, interview guidelines were used. The authors created the interview guide themselves, paying special attention to triangulation and the research objectives.

Data collection

In a quantitative study, the author collects data with the help of nine enumerators. Before data collection

began, all enumerators were trained on the study's objectives, determining respondents based on inclusion criteria, ethical aspects (explanation of respondents and informed consent), questionnaire content, and demonstration of how to collect data by filling out questionnaires. In a qualitative study, the authors conducted in-depth interviews with six informants. In-depth interviews were conducted simultaneously with data collection through questionnaires. Every day after data collection, the authors evaluate the questionnaire data and provide feedback to the enumerators.

Data analysis

The quantitative data in this study were analyzed using statistical computer software. The data were analyzed using univariate, bivariate, and multivariate techniques. In multivariate analysis, multiple logistic regression was used to determine the correlation between each independent variable and the dependent variable after controlling for other variables, and then to determine which independent variable was the most dominant influence. The transcript of the interview was created, and the qualitative data were analyzed using content analysis.

Ethical clearance

The Ethics Committee of the Faculty of Public Health of Universitas Indonesia approved the ethical review of the study, with the number 82/UN2.F10/PPM.00.02/2016. Respondents received information and informed consent. The authors guarantee that the research is carried out by taking the following factors into account: Self-determination privacy, confidentially, protection from discomfort, and the right to fair treatment [10].

Results

This study revealed the respondents' characteristics, family health behavior, factors related to family health behavior, and multivariate analysis results with a 95% confidence interval.

Table 1 showed that the majority of respondents have the following characteristics: Age >30 years (67.4%), education level was high school (57.8%), occupation was a farmer (64.7%), and a family income < regional minimum wages (72.2%), while the six informants in this study had educational backgrounds ranging from diplomas to master's degrees and were aged 30-55 years.

Table 2 showed that healthy family behavior was still low at 12.8%. It was known that vegetable and fruit consumption was 34.2%, not smoking at home was 26.7%, washing hands with water and soap was 31.6%, and using clean water was 46%.

Table 1: The characteristics of the respondents in Samosir district (n = 187)

Characteristics	Category	n	%
Age	≤ 30 years	61	32.6
	> 30 years	126	67.4
Education Level	No School	7	3.7
	Primary School	8	4.3
	Junior High School	28	15.0
	Senior High School	108	57.8
	Bachelor	36	19.3
Occupation	Farmers	121	64.7
	Civil Servant	13	7
	Entrepreneur	37	19.8
	Temporary Worker	8	4.3
	Other	8	4.3
Income	< Regional Minimum Wages	135	72.2
	≥ Regional Minimum Wages	52	27.8

Table 2: Family health behavior in Samosir district (n = 187)

Behavior	n	%
Consumption of vegetables and fruits	33	34.2
Not smoking at home	50	26.7
Washing hands with water and soap	59	31.6
Using clean water	86	46.0
Healthy behavior	24	12.8
Unhealthy behavior	163	87.2

The results of in-depth interviews also mentioned that healthy family behavior was still low, far from expectations.

1. "In general, a healthy family in Samosir is indeed far from what we expected, yes, even though there are also many who are headed toward it." (Informant 1).
2. "The low consumption of fruits and vegetables. those who plant vegetables sell their crops to get the income, not for their consumption. There is only a small amount for consumption" (Informant 4)
3. "Vegetables are not planted here, and we go to Onan (market) once a week. Then, the vegetables and fruit that are sold here are old, so they are less nutritious. Here, fruit is not a priority, the important thing is to be able to eat full." (Informant 6)
4. "There are still many who smoke and most of them smoke in the house. (Informant 1)
5. "Regarding hand washing, they have not been cultivated for a long time because of difficult water." (Informant 5)
6. "If in the village, we just wash our hands in the basin." (Informant 6)
7. "Yes, clean water is one of the biggest obstacles, especially from the villages up there, indeed, the need for drinking water and clean water is very lacking." (Informant 2)

Table 3 showed that 53% of the respondents had high knowledge, 69.5% had a negative attitude, 77% had a high level of education, 72.2% had a low income, 85% had less availability and affordability of health-care facilities, 65.2% had less information, 89.8% had community/religious leader support, and 59.4% were less supportive of health workers.

Table 3: Distribution of factors related to family health behavior in Samosir district (n = 187)

Factors	Category	n	%
Knowledge	Low	88	47
	High	99	53
Attitude	Negative	130	69.5
	Positive	57	30.5
Education Level	Low	43	23.0
	High	144	77.0
Income	Low	135	72.2
	High	52	27.8
Availability and Affordability of Health-care Facilities	Less	159	85
	Enough	28	15
Information Exposure	Less	122	65.2
	Enough	65	34.8
Community or Religious Leader Support	Less supportive	19	10.2
	Support	168	89.8
Health Worker Support	Less supportive	111	59.4
	Support	76	40.6

According to the findings of in-depth interviews, respondents had a negative attitude, less availability and affordability of health facilities, and less support for health workers.

1. "Puskesmas are located around community areas: Location on the side of the road. However, one house is far from another. "(Informant 3)
2. "We have Community Health Centre (Puskesmas) and assisting Puskesmas (Pustu or Poskesdes) in each sub-district. Even in Simanindo sub-district, there are four Puskesmas, there is at least one midwife in each village, and we have 213 cadres." (Informant 1).
3. "The responses of people in villages or remote villages are more open than in cities." (Informant 4)

Table 4 shows the statistical results of the final multivariate analysis, which revealed that the factors had a significant correlation with the behavior of family health after controlling for other variables such as attitude (p = 0.001; OR = 8.79), income (p = 0.001; OR = 7.92), and availability and affordability of health facilities (p = 0.049; OR = 3.32). The attitude variable was the most influential. This means that respondents with positive attitudes have a healthy behavior change 8.79 times higher than respondents with a negative attitude.

Table 4: Multivariate analysis of factors related to family health behavior in Samosir district (n = 187)

Factors	p-value	OR	95% CI
Knowledge	0.169	2.84	0.64–12.55
Attitudes	0.001	8.79	2.68–28.82
Income	0.001	7.92	2.55–24.6
Availability and Affordability of Health Facilities	0.049	3.32	1.01–10.95
Information Exposure	0.077	0.33	0.09–1.13

According to the findings of in-depth interviews, factors related to healthy family behavior included a poor economy, a closed mind and a negative attitude, inadequate infrastructure, and difficult access. Although there was no statistically significant correlation, it was known that a lack of community knowledge, tradition, and support from Puskesmas staff, as well as the support of community leaders or religious leaders, all played a role in healthy behavior.

1. "Many people here are affected by difficult economic factors. Besides that, there is still a tradition that also influences. Furthermore, the ignorance of the community "(Informant 1)
2. "We are not going all out. We have a lot of limitations both from us as a Puskesmas staff because of our busy schedule and overlapping tasks, and lack of community commitment. "(Informant 4)

Discussion

Family health behavior

According to this study, family health behaviors such as eating vegetables and fruits, not smoking at home, washing hands with water and soap, and using clean water are still low at 12.8%. The study found that economic factors, habits, and access to vegetables and fruits had an impact on the low consumption of vegetables and fruits. Farmers who grow vegetables and fruits sell more of their products to earn a living than consume them. In line with Lazzarino *et al.* found that low socioeconomic status was associated with unhealthy behavior in respondents from Thailand and the United Kingdom [11]. Reducing risky behaviors such as lack of fruit and vegetable consumption, smoking behavior, and lack of physical activity were predicted to avoid 80% of cardiovascular disease, cerebrovascular disease, diabetes mellitus, and 40% of types of cancer [12]. Consumption of vegetables and fruits is related to income and education level [8], [13]. The availability of supportive facilities is another factor that influences family health behavior. The weekly Onan market in Pangururan, the district capital, is only open once a week. People visit Onan to stock up on supplies for their families for a week. As a result, the presence of Onan (the weekend market) appears to influence the consumption of family vegetables and fruits.

The majority of smokers in the family are the head of the household, who consume 1–2 packs of cigarettes per day. According to the study, 75.4% of the respondents were reprimanded if they had smoking family members at home. In-depth interviews yielded similar results. This demonstrates that the general public is still unaware of the dangers of smoking at home. This is due to habits as well as the cold climate of the Samosir District. Samosir district is a wet tropical climate with temperatures ranging from 17°C to 29°C [14]. According to data from the Community Health Center and the interview results, acute respiratory infections are one of the most common problems in the Samosir district, particularly among children. Smoking bans at home do not increase smoking at smokers' homes [15]. The prohibition of

smoking in both the home and the environment outside the home has serious consequences.

This study also revealed that the community faces challenges in terms of clean water availability and access. It undoubtedly has an impact on how people wash their hands and drink clean water. Hand-washing behavior is low in families with low levels of education, low economic status, ethnic minorities, and limited access [16]. The low behavior of hand washing is correlated with the high incidence of diarrhea, which is the fifth most common disease in the Samosir district, at 7.6 % or 3572 cases in 2014. Even from in-depth interviews, it is clear that diarrhea is the most common ailment in the Ronggur Nihuta Subdistrict as a difficult water area. According to the findings of in-depth interviews, the low behavior of washing hands with soap is influenced by habits and difficulties in obtaining clean water. People have the habit of washing their hands with the water provided in the basin when their families eat together or when there are events or gatherings.

According to the study findings, 46% of people use clean water. This is consistent with the health profile of the Samosir District (2014), which stated that the majority of respondents do not have a water source and that only half of them use clean water [14]. Therefore, it is possible to conclude that the low behavior in using clean water is caused by water source availability and affordability problems. The community gets water from protected springs (26.2%), plumbing (21.4%), and lake water (20.9%). As many as 29.9% of the respondents have a source of water in the house, 61.5% access water sources as far as 100 m, 6.4% access water sources as far as 101 m–1 km, and 2.2% access water sources as far as more than 1 km. According to an in-depth interview, most people get their water from springs that are far enough from their homes that the road conditions are poor. People also drink, wash, farm, and raise livestock in dirty, smelly, and polluted lake water. This resulted in a high incidence of diarrhea in the Samosir District, particularly in the Ronggur Nihuta District, which has a scarcity of clean water. Soboksa *et al.* discovered that the water supply, hygiene, and sanitation intervention are linked to the incidence of childhood diarrhea in Ethiopia. Children in families where community-led total sanitation (CLTS) was not implemented had diarrhea 1.63 times more frequently than children in families where CLTS was implemented [17]. Another study discovered that for clean water consumption behavior to occur, the following five categories of factors must be positive: Risk factors, ability factors, normative factors, attitudinal factors, and self-regulation factors [18].

Factors related to family health behavior

This study also showed that factors that had a significant correlation with family health behavior were attitude, income and availability, and affordability of health facilities. It was known that respondents with a positive attitude have an 8.79 times higher chance of engaging in healthy behavior than respondents with a negative attitude. In line with the results of in-depth interviews, people have a closed attitude toward change and tend to surrender to the existing situation. These attitudes can inhibit behavioral change. Sheeran *et al.* discovered that interventions aimed at changing attitudes, self-efficacy, and norms are effective at encouraging healthy behavior change [19].

Aue and Roosen revealed that low economic status and poverty are linked to a person's poor health [20]. A sufficient income can have an impact on behavior and healthcare [21]. The majority of family heads' work as farmers is 64.7% non-permanent and non-routine income. The harvest period is known to be 6 months to a year. According to the findings of in-depth interviews, the majority of people's behavior is influenced by economic factors. This can be seen in the family's habit of selling vegetable and fruit gardens rather than eating them. The other respondents who have high incomes have a healthy behavior change 7.92 times higher than respondents who have low incomes. Low income can have an impact on the importance of spending money, allocating family spending, and reducing purchasing power. Another study discovered that family socioeconomic status was related to child health behaviors and that family attention influenced this [22].

The availability and affordability of existing health-care facilities in Samosir District play a role in family health behavior. The presence of a health service center close to the community may be one of the factors promoting healthy behavior [23]. The availability of health facilities that is accessible in terms of distance, travel time, terrain conditions, and cost is factors that strongly support the community's commitment to healthy living. The average distance traveled by the patient to reach the nearest health-care unit was used to assess the spatial availability of health services, whereas the time required by the patient to travel to the nearest health-care unit was used to assess spatial accessibility [24]. In terms of health services, in-depth interviews revealed that the availability and affordability of health facilities are quite adequate. This is evidenced by the presence of a community health center in each district, as well as at least one midwife in each village and five cadres. According to the Samosir District Health Profile, health facilities include one government hospital, five Puskesmas, ten mobile Puskesmas, 34 sub-health Puskesmas, 62 village health posts (Poskesdes), 211 integrated health centers (Posyandu). The Puskesmas employs an average of 7–8 nurses and 19–20 midwives. According to this study, respondents who have the availability and affordability of health facilities with sufficient opportunities have a 3.32 times higher rate of healthy behavior change than

respondents who have the availability and affordability of health facilities that are lacking. It has previously been stated that there is a lack of clean water, as well as hand washing facilities and markets. Sasaki *et al*. discovered that some accessibility variables had a significant impact on whether or not a person using the service. The accessibility of a car to a health center, hospital, and community store had a significant impact on the decision, while when using public transport, only the accessibility to a health facility was significant [25].

According to the findings of in-depth interviews with health service officers and Puskesmas staff, the promotion strategies used were advocacy to apply for operational assistance funds, health education, community empowerment through home visits, cadre empowerment, and Desa Siaga. Furthermore, cross-sector partnerships are carried out by involving village heads, community leaders, or religious leaders, as well as collaborating with the education office to promote healthy behavior in schools. Community empowerment and counseling are well-known effective strategies. The presence of an alert village and health workers who went directly to the community proved effective in lowering maternal mortality in 2008. On a national level, it was even elected as an active village champion.

Strength and limitations of the study

The author recognizes that this study has both strengths and weaknesses. The strength of this study is that it evaluates factors related to family health behaviors using a mixed method study to answer research questions and comprehensively explore the findings. In reducing bias, the author also conducted a VR questionnaire and triangulation test for information obtained from interviews. The limitation of this study is that the interview informants only included six people, even though they were quite representative of the thing being studied as key informants. Furthermore, because quantitative and qualitative data are collected concurrently, there may be things that researchers are unaware of that are relevant to the study findings.

Conclusion

Family health behavior in the Samosir district has remained poor (12.8%). According to the findings of the mixed method study, attitudes, income (economy), availability and affordability of health-care facilities, community characteristics, infrastructure, and access are all positively correlated with family health behavior. In a quantitative study, it was discovered that attitude was the dominant variable related to family health behavior, with a change in attitude to being good having an 8.79 times chance of causing a change in family health behavior.

As a result, interventions or efforts to improve those factors (determinants) will affect the improvement of family health behavior. Health promotion strategies such as health education, community empowerment, and cross-sector collaboration must be fully implemented to address the factors influencing family health behavior because they have the potential to increase family health behavior through family empowerment.

Recommendation

Creative, sustainable, and synergistic (cross-sector) approaches are required to change family healthy behavior and the factors that influence it. As a form of effective family development, home visits should be made regularly. In addition, increasing the participation of community leaders/religious leaders, village officials, and cadres is important not only for health socialization but also as community role models in healthy attitudes and behavior.

More research is needed to identify effective approaches to improving family health behavior.

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