Scientific Foundation SPIROSKI, Skopje, Republic of Macedonia
Open Access Macedonian Journal of Medical Sciences. 2022 Jan 12; 10(E):191-197.
https://doi.org/10.3889/oamjms.2022.8219
eISSN: 1857-9655
Category: *E - Public Health*
Section: *Public Health Education and Training*

Empowering Village Health Workers to Influence Preconception Behavior and Increase Utilization of Preconception Health Services in the Deli Serdang Regency

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Edited by: Sasho Stoleski
Citation: Linda I, Santosa H, Lubis Z, Siregar MFG. Empowering Village Health Workers to Influence Preconception Behavior and Increase Utilization of Preconception Health Services in the Deli Serdang Regency. Open Access Maced J Med Sci. 2022 Jan 12; 10(E):191-197. https://doi.org/10.3889/oamjms.2022.8219
Keywords: Preconception care; Village health worker; Health services; Health behavior
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Received: 10-Dec-2021
Revised: 27-Dec-2021
Accepted: 02-Jan-2022

Funding: This research did not receive any financial support
Competing Interests: The authors have declared that no competing interests exist

Abstract

BACKGROUND: Preconception health care are critical in addressing modifiable risk factors to prevent maternal death, neonatal death, unplanned pregnancies, birth defects, premature birth, and retardation of fetal growth in the womb.

AIM: The aim of this study was to determine the impact of preconception village health workers empowerment on changed in preconception health behaviors of brides and grooms-to-be, as well as improved utilization of preconception health services at the working area of eight community health centers in the Deli Serdang regency.

METHODS: This research is part of a dissertation study entitled Preconception Period Service Strategy on Brides and Grooms-to-Be through Empowerment of Preconception Village Health Workers in Deli Serdang Regency. This research used action research methods with an approach pre-experimental (one group pretest-posttest design). As many as 200 brides and grooms-to-be are involved as samples then sampling techniques using systematic random sampling technique, and involved 48 village health workers. The effect of the empowerment of village health workers in preconception health behaviors of brides and grooms-to-be performed by Wilcoxon Signed Rank Test with the statistical significance test with CI 95% and significant difference value $p < 0.05$.

RESULTS: There were a significant influence of preconception village health workers empowerment interventions on the knowledge, attitudes, and actions of brides and grooms-to-be in preconception health with the same probability value of $p = 0.001$. Most brides and grooms-to-be (80%) take advantage of preconception health services at health centers after following the intervention of empowerment of preconception village health workers.

CONCLUSIONS: Interventions that empower preconception village health workers have a significant impact on changed in preconception health behavior of brides and grooms-to-be and improve their use of preconception health services.

Introduction

Preconception and educational health care are critical in addressing modifiable risk factors to prevent morbidity, improve overall health, and improve birth outcomes. Reproductive living planning can assist women in planning their pregnancies, simply spacing them, and improving their health before becoming pregnant [1]. Although the public generally agrees that health status should be optimal, there is a lack of awareness about the importance of preconception health [2]. Every married couple looks forward to the post-marriage pregnant period. However, many of them fail to plan for their health and reproductive health in the months leading up to pregnancy [3].

Women of childbearing age are vulnerable to the risk of Anemia, Chronic Lack of Energy, infectious diseases, and non-communicable diseases, which can aggravate the health of women of childbearing age when they enter pregnancy, during pregnancy, childbirth, and postpartum. Anemia, diabetes, hypertension, malaria, and other conditions that are not ideal for pregnancy are among those that can cause a pregnant woman's condition to be unhealthy. Women under 20 are 54.2 out of 1,000 births, while women over 40 are 207 out of 1,000 births [4]. The prevalence of anemia and the risk of Chronic Energy Deficiency in women of reproductive age have a significant impact on the health of the baby at birth. Both nutritional conditions can cause stunting in children, as measured by birth weight and length. The baby's ideal birth weight is not <2500 grams, and the body length is not <48 centimeters [5].

Sourced from the North Sumatra health profile for 2019, the number of maternal deaths in North Sumatera was 202, with 53 deaths of pregnant women, 87 deaths of pregnant women, and 62 maternal deaths [6]. According to data from Deli Serdang regency's health profile, the number of maternal deaths in Deli Serdang regency in 2019 was 14 cases/44,434

live births. This illustration is lower than the number of maternal deaths in 2018, which was 15/44,550 live births. The majority of maternal deaths in Deli Serdang district occur in postpartum mothers, with 8 (eight) cases; the remaining part occurs in mothers during pregnancy [7].

Preconception health services can improve the probability of having a healthy baby through a variety of biomedical, behavioral, and social preventive interventions. Adolescent reproductive health services begin in order for both women and men to be physically, psychologically, and socially healthy. Preconception treatment programs aim to address maternal mortality, neonatal death, unplanned pregnancies, birth defects, premature birth, and fetal growth in utero underdevelopment, as well as to keep teenage boys and girls healthy and ensure they grow into healthy adults [8].

The Ministry of Health has released the Regulation of the Minister of Health of the Republic of Indonesia No. 97 of 2014 on the implementation of health services before pregnancy, pregnancy, childbirth and postpartum, the implementation of contraceptive and sexual health services which is a development of the implementation of Government Regulation No. 61 of 2014. The regulation aims to: (a) ensure the welfare of women so as to be able to give birth to healthy and quality children; (b) lower the level of pain and death of the mother and baby; (c) ensuring the achievement of quality of life and fulfilled reproductive rights; and (d) protect and enhance the commitment of comfortable and quality health services for mothers and children, relevant to advances in science and technology innovation [9], [10].

Preconception health is based on the assumption that a woman intends to become pregnant. Many women do not plan for a pregnancy, even though it is possible to have a medical condition that could have a negative impact on the pregnancy's outcome [11], [12]. Given the sheer number of unwanted pregnancies, the impact of preconception gaps on pregnancy, and the health risks that remain before and after pregnancy, pre-pregnancy medical care has the potential to greatly improve public health benefits [13].

Preconception health information and pregnancy planning for women are limited. The socio-cultural aspect is an addition that needs to be understood. It is necessary to enhance discussion of discomfort and concern in reproductive health and preconception with health care providers. The integration of culturally sensitive preconception treatments in client assessment should be explored [14]. Preconception treatment for women is depicted at a low level. The age of a woman, her marital status, her educational status, her knowledge of preconception care services, and the availability of preconception care units are all factors that influence her use of preconception health services. It is critical to develop an effective preconception treatment strategy and to be able to discuss all aspects of preconception care [15].

Preconception care provides a great opportunity to affect the health of a mother and her baby even into adulthood. The evidence demonstrating the positive effects of preconception health care on health in this stage of the life cycle is so compelling that it calls for new, effective methods of providing preconception treatment to protect offspring's health [16]. To improve the health of women during pregnancy and births, preconception health services should be improved before and between pregnancies. Intervention must be provided at the individual, family, organizational, and community levels, with a priority placed on promoting and preventing health problems in prospective mothers and fathers for a healthy pregnancy [17], [18]. Preconception should be interpreted as a "window of opportunity" for the promotion of a child's health, not only for early detection of genetic environmental interactions and risks but also for behavioral changes in women to abandon unhealthy habits [19].

The general public is still unaware of preconception health services. The presence of preconception village health workers in an effort to increase utilization of preconception health services can easily reach brides and grooms-to-be because the village health worker comes from the same location and are well-known to the public.

This study aimed to find out the effect of the empowerment of village health workers on changed in preconception health behaviors of brides and grooms-to-be, that are participatory and collaborative by involving researchers, head of health centers, the person in charge of the program, health cadres, midwives, and brides and grooms-to-be in empowering and improve of the utilization of preconception health services at the working area of eight community health centers in the Deli Serdang regency, province of North Sumatra, Indonesia.

Materials and Methods

This research is part of a dissertation study entitled Preconception Period Service Strategy on Brides and Grooms-to-Be through Empowerment of Village Health Workers in Deli Serdang Regency. This research used action research methods with an approach pre-experimental (one group pretest-posttest design). This study was approved by the Ethics Committee of Polytechnic of Health Ministry of Health Medan, North Sumatera Indonesia (No. 01.046/KEPK/POLTEKKES KEMENKES MEDAN 2021). Subjects were informed that their participation was entirely voluntary and anonymous. By returning completed questionnaires, participants indicated their agreement.

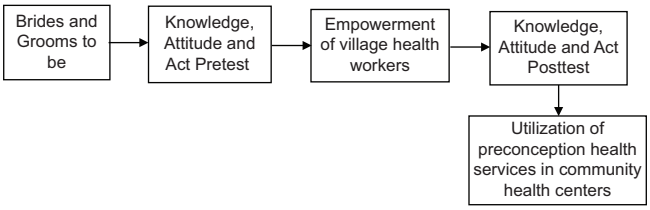

Figure 1: *Research implementation flow*

The population in the study was brides and grooms-to-be who had planned the wedding at the time of the study, have not had a health screening yet and had registered to the Village Hall Office and lived in the working area of eight community health centers selected as sample units. As many as 200 brides and grooms-to-be are involved as samples then sampling techniques using systematic random sampling technique, and involved 48 village health workers with a total of six people for each community health center. Time of research implementation from April to September 2021.

Training on village health workers had been conducted three times at each research site, 1 time each week, namely: once for material on preconception reproductive health, once for material on preconception health examinations, and once for simulation of reproductive health education in groups of fellow village health workers.

Village health workers were tasked with approaching and inviting brides and grooms-to-be to attend preconception health extension activities held in the village hall office, as well as providing information and health education about preconception health to the bride and groom-to-be brought by her, and this activity was carried out at least twice a week for 2 weeks by village health workers. Pretest to the knowledge, attitudes, and actions of brides and grooms-to-be regarding preconception health care before village health workers provide health education about preconception health. After the bride and groom-to-be were given preconception health education twice by village health workers, a posttest was conducted using the same questionnaire as the pretest measurement to assess the knowledge, attitudes, and actions of brides and grooms-to-be regarding preconception health care.

Data has been collected through the completion of 20-question questionnaires, the use of the Guttmann Scale (right = 1, wrong = 0) to assess knowledge, attitudes (agree = 1, disagree = 0), and actions (ever = 1, never = 0), and observation of documentation for secondary data. Analysis employs descriptive statistics in the form of averages and percentages. The effect of the empowerment of village health workers on preconception health behaviors of brides and grooms-to-be performed by Wilcoxon Signed Rank Test with the statistical significance test with CI 95% and significant difference value $p < 0.05$. The relationship of variables (sources of information) with knowledge, attitudes, and actions in the preconception health of brides and grooms-to-be is tested with Spearman rank correlation tests. The flow of the research implementation can be seen in Figure 1.

Results

Characteristics of village health workers

The number of village health workers trained was 48. Each community health center there are six village health workers who are trained and conducted as many as three meetings. The characteristics of village health workers can be seen in the following table:

From Table 1, it can be known that most age of village health workers (41.7%) were in the age group of >30–40 years, have a level of secondary education (81.3%), Muslims (85.4%), Javanese (60.4%), have a job as a housewife (83.3%), long-married >10 years (52.1%), and the number of children ≤3 people (91.7%).

Table 1: Characteristics of village health workers

Variable	Category	Frequency	%
Age of village health workers	Mean age = 36.33		
	SD = 7.312		
	20–30 years	12	25.0
	>30–40 years	20	41.7
	>40 years	16	33.3
Educational level	Low education	5	10.4
	Secondary education	39	81.3
	Higher education	4	8.3
Religion	Islam	41	85.4
	Protestant christianity	7	14.6
Ethnicity	Javanese	29	60.4
	Batak toba tribe	7	14.6
	Batak karo tribe	5	10.4
	Malays	4	8.3
	Batak mandailing tribe	3	6.3
Main occupation	Housewife	40	83.3
	Private employees	5	10.4
	Self employed	3	6.3
Long married	<5 years	10	20.8
	5–10 years	13	27.1
	>10 years	25	52.1
Number of children	≤3 person	44	91.7
	>3 person	4	8.3

Sociodemographic characteristics of the study respondents

The total number of respondent as many as 200 brides and grooms-to-be who have participated in this study. The average age of respondents = 24.39 with SD = 4,920, more than half of respondents of 117 (58.5%) were in the age group of 15–24 years. Most of the respondents as many as 133 respondents (66.5%) have a secondary education. Most of the respondents of 169 people (84.5%) were Muslim. More than half of the respondents of 115 people (57.5 9%) were Javanese. Most of the respondents had a job as a private employee 61 people (30.5%), self-employed 51 people (25.5%), and laborer 43 people (21.5%). Most respondents (57.5%) have an income of ≥3.000.000 IDR. Most respondents get information about preconception health care from electronic/print media

(33%) and only 22% of respondents get preconception health information from village health workers. Data on sociodemographic and respondent characteristics can be seen in Table 2.

Table 2: Sociodemographic characteristics of respondents

Variable	Category	Frequency	%
Age of respondents	Mean Age = 24.39		
	SD = 4.920		
	15–24 years	117	58.5
	25–34 years	77	38.5
	35–49 years	6	3.0
Educational level of respondents	Low education	13	6.5
	Secondary education	133	66.5
	Higher education	54	27.0
Religion	Islam	169	84.5
	Protestant christianity	21	10,5
	Catholic	10	5.0
Ethnicity	Javanese	115	57.5
	Batak Toba tribe	26	13.0
	Batak Karo tribe	25	12.5
	Malays	29	14.5
	Minangkabau tribe	2	1.0
	Batak Mandailing tribe	3	1.5
Main occupation of the respondent	Civil servants	9	4.5
	Private employees	61	30.5
	Self employed	51	25.5
	Laborer	43	21.5
	Not working	36	18.0
Income	<3.000.000,-IDR	85	42.5
	≥3.000.000,-IDR	115	57.5
Source of Information	Health worker	44	22.0
	Electronic/print media	66	33.0
	Family/friends	31	15.5
	Never got the information	59	29.5

Preconception health behavior of the brides and grooms-to-be before and after the intervention of empowerment of village health workers

Respondents' behavior was measured by assessing knowledge, attitudes and actions about preconception health care in the time before and after the empowerment of village health workers. The respondent's average knowledge of pre-test results was 67.66 with SD = 5.745, while from post-test results was 87.88 with SD = 5.501. The average respondent's attitude from the pre-test results was 75.43 with SD = 4.505, while the post-test result was 87.88 with SD = 4.296. The average respondent's action of pre-test results was 66.72 with SD = 9.278, while the post-test result was 88.35 with SD = 6.243. For more details, can be seen in Table 3.

Table 3: Average behavior of respondents before and after the intervention of empowerment of village health workers

Variable	Mean	SD	Minimum–Maximum	95% CI
Pre-test knowledge	67.66	5.745	50–85	66.86–68.46
Post-test knowledge	87.88	5.501	80–100	87.11–88.64
Pre-test attitude	75.43	4.505	60–85	74.80–76.05
Post-test attitude	87.88	4.296	80–100	87.28–88.47
Pre-test action	66.83	9.367	40–90	65.52–68.13
Post-test action	88.30	6.269	70–100	87.43–89.17

Furthermore, the normality test on data on knowledge, attitudes, and actions variables through the Kolmogorov Smirnov normality test, obtained the result that knowledge variables, attitude variables, and action variables are not distributed normally with the same probability value of p = 0.001. To find out the difference between the knowledge variables, attitudes, and actions of respondents in the time before and after the action by using the Wilcoxon Signed Rank Test. There was a significant difference between knowledge when pre-tested and attitude when post-test (p = 0.001), there was a significant difference between attitude when pretest and attitude when posttest (p = 0.001), and there was a significant difference between actions when pretested and when post-test (p = 0.001), as shown in Table 4.

Table 4: Differences in knowledge, attitudes, and actions of respondents before and after intervention empowerment of village health workers

Variable	Mean	SD	Z	p value
Pretest knowledge	67.66	5.745	−12.349	0.001
Posttest knowledge	87.88	5.501		
Pretest attitude	75.43	4.505	−12.359	0.001
Posttest attitude	87.88	4.296		
Pretest action	66.83	9.367	−12.381	0.001
Posttest action	88.30	6.269		

Utilization of preconception health services by brides and grooms-to-be after the intervention of empowering village health workers

Most brides and grooms-to-be (80%) as many as 160 respondents who participated in the empowerment activities of village health workers, visited the health center to conduct health checks and preconception health counseling. Utilization of preconception health services increased after intervention at the research site. Changed in the utilization of preconception health services can be seen in Figure 2:

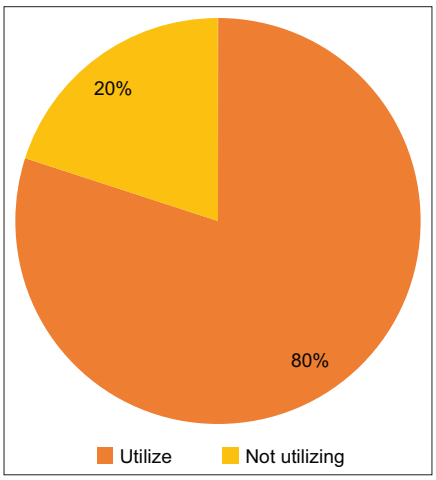

Figure 2: Utilization of preconception health services by brides and grooms-to-be after the intervention of empowering village health workers

Table 5 shows that there was no relationship between the source of information with knowledge of preconception health care p value 0.379, there was no relationship between the source of information with the attitude about health care preconception p value 0.605 and no relation of the source of information with the action in preconception health with the value p value of 0.498.

Table 5: Relationship of information sources with behaviors in preconception health of brides and grooms-to-be.

Variable	Preconception health behaviors of brides and grooms-to-be					
	Knowledge		Attitude		Act	
	p value	Correlation coefficient	p value	Correlation coefficient	p value	Correlation coefficient
Source Of Information	0.379	−0.63	0.605	0.037	0.498	−0.048

Discussion

A woman's age, marital status, educational status, knowledge of preconception care services, and availability of preconception care units are all factors influencing the utilization of preconception health services. It is important to establish an effective preconception treatment strategy and be able to discuss all components of preconception care [15]. According to the results of Chronopoulou *et al*. (2021) research that age is a risk factor for the most systematic health problems and older women are more likely to re-enter into a history of risky pregnancy. However, the preconception period is an ideal time to recognize and address health problems, social problems, and harmful lifestyle behaviors to optimize maternal health before pregnancy, ultimately reducing infertility, perinatal morbidity, and mortality [20].

Knowledge is truth or information obtained through experience or learning. The respondent's average knowledge of pretest results was 67.66 with SD = 5.745, while from post-test results was 87.88 with SD = 5.501. The average respondent's attitude from the pre-test results was 75.43 with SD = 4.505, while the post-test result was 87.88 with SD = 4.296. The average respondent's action of pre-test results was 66.72 with SD = 9.278, while the post-test result was 88.35 with SD = 6.243. There was a significant difference between knowledge when pretested and attitude when posttest (p = 0.001), there was a significant difference between attitude when pretest and attitude when posttest (p = 0.001), and there was a significant difference between actions when pretested and when posttest (p = 0.001).

The findings are consistent with studies conducted in the Southern Ethiopian, Scotland, and Italy, which investigated how women's lack of knowledge about preconception health affects women, health professionals, and policy. This is most likely due to low socioeconomic conditions, low preconception care literacy, low pregnancy screening, low health care facility attention to preconception care implementation, and a lack of preconception health clinics. It emphasizes and provides preconception care health education to women in order to increase their knowledge [21], [22], [23], [24].

The majority of women believe that the preconception period is critical for ensuring good health, with regular physical activity being one of the most important priorities [25]. Women with planned and unplanned pregnancies say they can participate in limited health care and adopt preconception health behaviors [26].

Hussein *et al.* also found that women who receive preconception health education and counseling will be more likely to improve their knowledge and positive health behaviors. Primary prevention interventions involving multifactor reproductive health risks are a priority strategy [27]. The importance of providing women with health education and health promotion in order to improve their knowledge of preconception health care [28]. Good knowledge is required for the development of evidence-based interventions to improve pre-pregnancy counseling service accessibility and understanding [29]. The perception of women with low to secondary education influences their views on the provision of preconception care. Proactive preconception care, including fertility information, is expected to be provided to encourage adequate pregnancy preparation and contribute to improving perinatal health among women who are socioeconomically more vulnerable [30].

Most brides and grooms to be (80%) who participated in the empowerment activities of village health workers, visit the community health center to conduct health checks and preconception health counseling. Utilization of preconception health services increased after intervention at the research site. There is no relationship between the source of information with knowledge of preconception health care p value 0.379, there was no relationship between the source of information with the attitude about health care preconception p value 0.605 and no relation of the source of information with the action in preconception health with the value p value of 0.498.

According to the results of a study conducted in the Netherlands, most women are unaware of the concept of preconception counseling or the accessibility of preconception counseling. Preparation for pregnancy, a lack of perceived information, and problems in previous pregnancies are all common reasons for participating in preconceptions. Respondents are generally positive about having participated in preconception counseling for their own health [29]. It is critical to encourage more women to gather preconception health information in order to prepare for their pregnancy [31]. Local community workers and health professionals were the two main sources of information about preconception care [12].

A woman's health before conception affects the outcome of her pregnancy and the health of her offspring. Most pregnancy-related problems can be addressed before a woman becomes pregnant. Preconception care is a research-based health intervention that improves maternal and child health by lowering morbidity and mortality in high- and low-income countries. Public awareness to utilize health care services is critical in improving health-seeking behavior, service utilization, and healthy lifestyles [32], [33], [34].

The knowledge of preconception care is essential to be improved so that with good knowledge from competent sources of information will provide a better understanding of preconception health care. Good knowledge is much related to the clarity of information obtained before, which is continuously conveyed through health education so that it will form new knowledge. A positive attitude and the ability to accept change provide an opportunity for the acceptance of new information that benefits the health of the bride and groom-to-be, as well as the continuation of healthy reproductive stages for women and the quality of the baby to be born. Preconception health services are a promotional and preventive step that aims to prepare health prior to starting pregnancy in order to reduce the risk of health problems during pregnancy and produce a healthy baby. The bride and groom-to-be who plan to start a pregnancy after marriage require appropriate and continuous preconception health information so that they can use preconception health services that have been prepared in health facilities with good knowledge, attitude, and action.

Conclusions

Intervention empowerment of village health workers significantly affects the preconception health behavior of the brides and grooms-to-be and enhancing the utilization of preconception health services in community health centers. It is strongly advised to increase the dissemination of information about preconception health in order to improve women's health prior to pregnancy in order to ensure a healthy pregnancy and the quality of the baby born.

Acknowledgments

Thank you to the head of the North Sumatra Province's Deli Serdang Regency Health Office for giving permission to conduct research, as well as the eight heads of community health centers that served as research sites, including the heads of Namorambe community health center, Sei Mencirim community health center, Patumbak community health center, Delitua community health center, Talun Kenas community health center, Gunung Tinggi community health center, Aras Kabu community health center, and Kenangan community health center, who supported this research. Thank you to all village health workers and all respondents who have been willing to contribute to this research.

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