Nurse Media Journal of Nursing
e-ISSN: 2406-8799, p-ISSN: 2087-7811
https://ejournal.undip.ac.id/index.php/medianers
11(1): 94-103, April 2021
https://doi.org/10.14710/nmjn.v11i1.35829

ORIGINAL RESEARCH

Factors Associated with Genital Hygiene Behaviors in Cervical Cancer Patients in Surakarta, Indonesia

Afriza Umami[1,2], Sudalhar Sudalhar [2], Anita Lufianti[3], Edit Paulik[1], Regina Molnár[1]

[1]*Department of Public Health, Faculty of Medicine, University of Szeged, Szeged, Hungary*
[2]*Stikes Muhammadiyah Bojonegoro, Bojonegoro, Indonesia*
[3]*Nursing Study Nursing, Universitas An Nuur, Purwodadi, Grobongan, Indonesia*

Article Info

Article History:
Received: 15 January 2021
Revised: 27 March 2021
Accepted: 31 March 2021
Online: 21 April 2021

Keywords:
Genital hygiene behavior; social media; environmental sanitation; stress; husband's education; husband's support

Corresponding Author:
Afriza Umami
Department of Public Health, Faculty of Medicine, University of Szeged, Szeged, Dóm tér 10 H-6720, Hungary
Email:
umami.afriza@med.u-szeged.hu

Abstract

Background: Maintaining genital cleanliness is essential for women since intimate organ problems can cause female tract infections. Poor genital hygiene can affect sexually transmitted infections, and therefore, it is prominent to investigate factors related to genital hygiene behaviors in women to reduce this type of infection.
Purpose: This study aimed to find out the factors associated with genital hygiene behaviors in cervical cancer patients.
Methods: A case-control study was conducted on cervical cancer patients in Surakarta, Indonesia, from December 2017 to February 2018. A structured questionnaire was used to collect data from 178 subjects using a fixed disease sampling technique that consisted of 56 cases of poor genital hygiene behaviors and 122 controls of good genital hygiene behaviors with a comparison of 1:2. The dependent variable was genital hygiene behaviors, while the independent variables were stress, exposure to social media regarding genital hygiene, environmental sanitation, husband's education, and support. Logistic regression was employed for data analysis.
Results: Genital hygiene behaviors increased with exposure to social media related to genital hygiene (OR=9.20; 95% CI=3.87 to 21.87, p<0.001), good environmental sanitation (OR=5.16; 95% CI=2.19 to 12.14, p<0.001), high husband's education (OR=6.49; 95% CI=2.23 to 18.91, p=0.001) and support (OR=2.88; 95% CI=1.24 to 6.67, p=0.013). Women who experienced psychological problems such as stress showed decreased genital hygiene behaviors (OR=0.25; 95% CI=0.94 to 0.71, p=0.009).
Conclusions: Genital hygiene behaviors in women increased with exposure to social media related to genital hygiene, adequate environmental sanitation, high husbands' education, and support. In contrast, stress decreased women's behaviors in practicing genital hygiene. These findings emphasize the need for women to improve genital hygiene behaviors as well as for nurses to explain how to increase women's genital hygiene behaviors.

How to cite: Umami, A., Sudalhar, S., Lufianti, A., Paulik, E., & Molnár, R. (2021). Factors associated with genital hygiene behaviors in cervical cancer patients in Surakarta, Indonesia. *Nurse Media Journal of Nursing, 11*(1), 94-103. https://doi.org/10.14710/nmjn.v11i1.35829

1. Introduction

Genital hygiene care behaviors are necessary for women's health and well-being to feel comfortable socially and avoid sexually transmitted diseases. Genital hygiene behaviors are self-care practices performed by any individuals following their knowledge, beliefs, and habits. These practices vary between individuals and can be observed in terms of frequencies and methods. Implementing genital hygiene practices concerning the quality and frequency is the most important thing to protect women's health (Bulut, 2020; Pete et al., 2019).

Genital hygiene is an essential method of preventing genital infections and their more severe consequences. It is known that personal hygiene habits are critical to the control of many infectious diseases (Chen et al., 2017). Genital hygiene is a significant component of women's health and is vital for protecting reproductive health. However, some genital hygiene behaviors and practices carried out by women can affect women's susceptibility to sexually transmitted infections and morbidity of other reproductive diseases (Hamed, 2015). Moreover, women's

intimate hygiene is an essential priority for health care professionals and women to promote overall personal health and hygiene (Calik et al., 2020).

The cleanliness of the genital is one of the most critical elements in maintaining women's health. Apart from the many factors that cause vaginal infections, genital hygiene is recognized as a vital behavior to prevent disease in the intimate female area (Anand et al., 2015; Attieh et al., 2016). Genital infections can damage the quality of life and result in social isolation, negatively affecting women's sexual and family life. The causes of genital infection in women are very diverse. The proximity of the urethra, vagina, and anus is the most critical factor predisposed to genital infections; this is accompanied by individual factors that increase the risk of genital infections, such as a woman's behaviors of maintaining personal and genital hygiene (Adibelli et al., 2014).

Each year, about 100 million women worldwide are exposed to genital infections that can cause vaginitis, cervicitis, urethritis, and trichomoniasis associated with adverse pregnancy outcomes (World Health Organization, 2016; World Health Organization, 2015). Bacterial infections that often occur in women are caused by bacterial vaginosis and candidiasis (Centers for Disease Control and Prevention, 2020; Maje, 2019; Sevil et al., 2013). Genital hygiene is a significant factor in reproductive health protection. Infection can occur due to reduced acidity, poor menstrual hygiene, use of reusable clothes, personal unhygienic practices, keeping the genital area moist, using contaminated towels, and wearing tight non-absorbent underwear (Bulut, 2020; Karadeniz, 2019; Pete et al., 2019; Torondel et al., 2018).

Based on the Indonesian demographic and health survey in 2017, it was found that the prevalence of sexually transmitted infections (STIs) and STI symptoms among married women and men, who were sexually active, was 14% in women and 2% in men (National Population and Family Planning Board [BKKBN], 2018). STIs are more common in women because the female reproductive tract is more susceptible to infection, and also the practice of genital hygiene during menstruation needs to be considered. Reproductive health problems in women most often arise in developing countries, including Indonesia (Murti & Lutfiyati, 2017).

Previous studies have examined the relationship between genital hygiene and the incidence of female genital infections. It is shown that poor genital hygiene behaviors are one of the risk factors affecting female genital diseases, such as cervical cancer and other sexually transmitted infections (Hamed, 2015; Maje, 2019; Sevil et al., 2013; Torondel et al., 2018, Umami et al., 2018). The researchers are currently conducting research to find out the factors that affect female genital hygiene behaviors. In a country like Indonesia, genital health and reproductive health are not widely discussed in the community. Many women feel embarrassed to have discussions with health workers (Rahma et al., 2020). People feel uncomfortable talking about this in public due to taboos and social beliefs (Shah et al., 2019).

Research also shows that the role of a husband is very important for a wife; the husband can provide support for improving health and maintaining the harmony of a family (Lufiati et al., 2015; Musyriqoh, 2016). The support that a husband provides for his spouse will improve the partner's mental health, reduce stress and help financially and emotionally (Larasati, 2012). Individuals who have a high-stress perception tend to reduce their behaviors to improve health; they tend to practice behaviors that deviate from healthy behaviors (Amabebe & Anumba, 2018; Park & Iacocca, 2014). Furthermore, social media exposure also plays an important role for an individual in seeking for information to improve hygiene behaviors (Leonita & Jalinus 2018). Nowadays, where technological advances are increasingly sophisticated, information can easily be accessed through social media and the internet (Jang et al., 2017; Yasya et al., 2019).

This study is a part of previous research, in which the previous study aimed to find out risk factors for cervical cancer. The previous study showed that the risks of cervical cancer increased with the number of sexual partners, higher body mass index (BMI), and stress, but decreased with higher education, higher income, age at first sexual intercourse, and poor genital hygiene behaviors (Umami et al., 2018). The current study needs to be carried out to investigate factors associated with genital hygiene behaviors among patients who have cervical cancer in order to anticipate the occurrence of sexually transmitted infections. Accordingly, this study aimed to determine factors affecting genital hygiene behaviors among women with cervical cancer. The independent variables in this study were stress, exposure to social media regarding genital hygiene, environmental sanitation, husband's education, and support.

2. Methods

2.1 Research design

This research was an epidemiological study that employed an analytic observation using a case-control study design.

2.2 Setting and samples

The research was conducted in a public hospital in Surakarta, Indonesia, from December 2017 to February 2018. The population was women undergoing cervical cancer treatment. The samples were those patients undergoing treatment in the obstetrics and gynecology department of the specified hospital. This study was a continuation of a previous study conducted by the researchers (Umami et al., 2018) to assess risk factors for cervical cancer. The previous study findings showed a risk factor affecting cervical cancer was poor genital hygiene. Consequently, further investigation was needed to determine what factors affecting genital hygiene behaviors in women to prevent cervical cancer.

This study used a fixed disease sampling technique for recruiting the subjects. The inclusion criteria included cervical cancer patients who had been diagnosed by a physician based on history, physical examination, screening results, or histopathological tissue biopsy. Pregnant women were excluded from the study. The total samples were 178, with a ratio of 1:2. There were 56 subjects practicing poor genital hygiene that were used as cases, and 122 subjects practicing good genital hygiene that were placed as controls.

2.3 Measurement and data collection

The dependent variable in this study was genital hygiene, the act of maintaining the female genitals' cleanliness, both during menstruation, before and after sexual intercourse, and daily tasks such as cleaning the genitals after urinating and using a condom on a partner. Genital hygiene was assessed using a questionnaire developed by the researchers based on the literature reviews and previous studies (Karahan, 2017; Sari et al., 2016) and was tested for its validity and reliability. This questionnaire contained 25 questions with Likert scales of never (1), rarely (2), sometimes (3), often (4), and very often (5). The total score ranged from 25-125 and was categorized into good (the score was higher than the mean data) and poor (the score was less than the mean data). The validity tests included content validity and face validity. The reliability test was carried out by measuring the variables using the SPSS 23 statistical program to calculate the item-total correlation (≥0.20) and Cronbach's alpha (≥0.70).

The independent variables in this study included stress, exposure to social media related to genital hygiene, environmental sanitation, husband's education, and support. Stress was assessed by using several indicators such as, how the patient felt, and whether the patient had experienced feelings of anxiety, irritability, and overreacts to situations in his/her life for at least three months. Stress was evaluated based on the questions in the Perceived Stress Scale (PSS) (Cohen, 1994; Song et al., 2017). This questionnaire is a standardized questionnaire. It was translated into the Indonesian language and tested for face and content validity by a psychologist and linguist. This questionnaire contained 10 questions with Likert scales of never (0), rarely (1), sometimes (2), often (3), and very often (4). The total score ranged from 0-40, and was categorized as follows: normal (0-7), low (8-11), moderate (12-15), high (16-20), and very high (≥21). Furthermore, for the multivariate data analysis, it was converted into a dichotomy, namely no stress with a score of 0-7 and stress with a score of ≥8. The husband's education was the last formal level of education obtained by the research subject's husband. Meanwhile, the husband's support was a motivation and encouragement given by the husband to his partner in supporting genital hygiene behaviors. Environmental sanitation was assessed based on how the house environment was, whether it had clean water sources, and the use of latrines. Social media exposure described whether a woman had accessed information about genital hygiene through social media.

Data were collected in the obstetrics and gynecology department of the specified hospital. Patients diagnosed with cervical cancer by a physician based on physical examination as well as supporting examinations with biopsy, pap smears, and Visual Inspection with Acetic Acid (VIA) tests were taken as research subjects. Patients who agreed to be the research subjects were informed of the research objectives and consented to their participation. The patients were given a questionnaire sheet to be completed. Genital hygiene behaviors were assessed using the questionnaire in which a mean score of ≥69 indicated good genital hygiene. From the results of

the samples, data analysis was then carried out to determine factors affecting female genital hygiene behaviors. The independent variables included stress, social media exposure related to genital hygiene, environmental sanitation, husband's education, and support.

2.4 Data analysis

Data analysis was performed using a multiple logistic regression analysis with a significance level of ≤0.05 to determine the magnitude of the determinant influence on the occurrence of genital hygiene behaviors.

2.5 Ethical considerations

The research ethics in this study included informed consent, anonymity, confidentiality, and ethical clearance. This study obtained ethical approval from the Health Research Ethics Committee of Dr. Moewardi Hospital, Surakarta, (Reference number: 1/I/HREC/2017). All participants were informed of the study and signed informed consent for their voluntary participation.

3. Results

3.1 Characteristics of respondents

There were 56 subjects in the case group and 122 subjects in the control group. Among the subjects, 65.2% received high support from their husbands. Most respondents had accessed information about genital hygiene through social media (52.2%) and had adequate environmental sanitation (54.5%). Respondents who experienced very high-stress perceptions were 9%. Detailed information on the frequency distribution of the subject characteristics is presented in Table 1.

Tabel 1. Characteristics of respondents

Variable	Frequency (f)	Percentage (%)
Exposure to social media regarding genital hygiene		
No	85	47.8
Yes	93	52.2
Environmental Sanitation		
Poor	81	45.5
Adequate	97	54.5
Husband's Education		
Low	130	73.0
High	48	27.0
Husband's Support		
No	62	34.8
Yes	116	65.2
Stress (Perceived Stress Scale)		
Normal (0-7)	51	28.7
Low (8-11)	47	26.4
Moderate (12-15)	38	21.3
High (16-20)	26	14.6
Very High (≥ 21)	16	9
Genital Hygiene		
Poor	56	31.5
Good	122	68.5

3.2 Relationships between genital hygiene behavior and risk factor variables

In this study, we explored the relationship between five independent variables and genital hygiene behaviors in women. Table 2 shows that, according to the bivariate analysis, four variables had a statistically significant relationship at the level of $p<0.05$, and one variable showed no significant relationship, namely husband's support.

Table 3 shows that the five variables analyzed using multiple logistic regression had a statistically significant relationship ($p<0.05$). Women who have received information about genital hygiene on social media had a role of 9.20 times to implement good hygiene behaviors

compared to women who had never accessed information (OR=9.20; 95% CI=3.87 to 21.87, p<0.001). Women who lived in an environment with adequate sanitation had a 5.16 times role in implementing good hygiene behaviors. Similarly, husband's education (OR=6.49; 95% CI=2.23 to 18.91, p=0.001) and high husband's support (OR=2.88; 95% CI=1.24 to 6.67, p=0.013) would make women practice good genital hygiene behaviors. Meanwhile, women who perceived stress would reduce their behaviors in practicing good genital hygiene (OR=0.25; 95% CI=0.94 to 0.71, p=0.009).

Table 2. Factors associated with good genital hygiene behavior among subjects

Variable	Genital Hygiene Behavior				Crude OR*	CI* (95%)		*p*-value
	Poor		Good†			Lower limit	Upper limit	
	f	%	f	%				
Exposure to social media regarding genital hygiene								
No	43	(50.6)	42	(49.4)	1			
Yes	13	(14.0)	80	(86.0)	6.30	3.05	12.99	<0.001
Environmental Sanitation								
Poor	35	(43.2)	46	(56.8)	1			
Adequate	21	(21.6)	76	(78.4)	2.75	1.43	5.29	0.002
Husband's Education								
Low	48	(36.9)	82	(63.1)	1			
High	8	(16.7)	40	(83.3)	2.92	1.26	6.77	0.010
Husband's Support								
No	25	(40.3)	37	(59.7)	1.85	0.96	3.56	0.063
Yes	31	(26.7)	85	(73.3)	1			
Stress								
No	8	(15.7)	43	(84.3)	1			
Yes	48	(37.8)	79	(62.2)	0.306	0.133	0.706	0.004

Bivariate analysis using Chi-square test; *OR, odds ratio; CI, confidence interval; †good genital hygiene behavior as a reference mark

Table 3. Adjusted associations between good genital hygiene behavior and related factors

Independent variables	β	*p*-value	Adjusted OR (95% CI)
Exposure to social media regarding genital hygiene	2.22	<0.001	9.20 (3.87-21.87)
Environmental sanitation	1.64	<0.001	5.16 (2.19-12.14)
Husband's education	1.87	0.001	6.49 (2.23-18.91)
Husband's support	1.06	0.013	2.88 (1.24-6.67)
Stress	-1.35	0.009	0.25 (0.09-0.71)
-2 Log likelihood	156.68		
Nagelkerke R^2	0.430		

Based on the multivariate analysis in Table 3, it could be concluded that the relationship between exposure to social media regarding genital hygiene, environmental sanitation, stress, and husband's education and support was statistically significant. The analysis also found that the score of R^2 Nagelkerke was 0.430, which means that the five independent variables could explain the variance of genital hygiene behaviors by 43 %, and the remaining 57 % was explained by other factors.

4. Discussion

4.1 The relationship between social media exposure and genital hygiene

The results of this study showed that women who have received information about genital hygiene through social media have a 9.20 times role in implementing good hygiene behaviors compared to women who have never accessed information from social media. Social media is a new form of information and communication technology that is overgrowing and is known to influence everyday human life, including health information. This research suggests that women exposed to social media related to genital hygiene have nine times improved good habits in genital cleaning than women who had never been exposed to social media. Information obtained online

increases women's knowledge about how to clean the female area; they can consult online with health workers available from various applications or platforms. This study is in line with research conducted by Shah et al. (2019), which assessed adolescent girls in Nepal and found that knowledge of good genital hygiene habits increased two times higher in the subjects who were exposed to social media than those who were not exposed to social media.

Access to the internet occurs more in women of childbearing age than men of childbearing age (National Population and Family Planning Board [BKKBN], 2018). Previous studies showed that interactive social media creates an ideal environment for women to get information and support by sharing experiences and concerns (Jang et al., 2017; Yasya et al., 2019). The need for accurate, precise, and up-to-date information is increasingly needed in line with the rapid development of information technology, especially in the health sector. Social media via the internet has a great potential for health promotion and other health interventions, and it is easier to hit targets at every level. Empirical evidence shows that social media helps carry out health promotion efforts to increase understanding and support people to behave healthily (Leonita & Jalinus 2018).

4.2 The relationship between environmental sanitation and genital hygiene

This study indicated that adequate environmental sanitation increased women's genital hygiene behavior five times higher than women who lived in harmful environments. A supportive environment, such as a source of clean water and a toilet in the house, will help women facilitate access to clean their female area. Water and also toilets are essential components in environmental cleanliness and personal hygiene (Özyazıcıoğlu et al., 2011).

Environmental sanitation describes the control of environmental factors that form links in disease transmission. This category includes solid waste management, water, wastewater treatment, industrial waste treatment, noise, and pollution control. The description of diarrheal transmission represents an excellent way to understand disease pathways through the environment and how environmental health and hygiene can help prevent disease transmission (Murthy et al., 2013). The environmental conditions and practices that facilitate such infectious agents' carrying into our bodies are termed environmental risk factors (Alemu et al., 2012; Hailemariam et al., 2012).

4.3 The relationship between the husband's education and support on genital hygiene

The high husband's education would improve women's behavior to practice good genital hygiene 6.49 times compared to women having husbands with low education. This result is in line with a study by Çankaya and Yilmaz (2015), which showed that the economic status and education of a partner affect the chronic condition of women to have good genital hygiene. This is because a good husband's knowledge and insight will support his wife in maintaining cleanliness (Çankaya & Yilmaz, 2015). Husband's education affects the wife's genital hygiene behavior.

The support of a husband also affects the wife's behavior; the role of the family in health is recognizing health problems, providing care, and taking advantage of existing health services (Mubarak, 2012). The family has several support functions, one of which is informational support, which functions as a collector and disseminator of information, explaining the provision of suggestions, suggestions, and information that can be used to reveal a problem (Yusuf & Budiono, 2016).

In this study, women who received support from their husbands had a role in practicing good genital hygiene habits 2.88 times than women who did not receive support from their husbands. This finding is congruent with studies by Lufiati et al. (2015) and Musyriqoh (2016), showing that the family is included in the reinforcing or driving factor, which will motivate individuals, families, groups, and communities to carry out health behaviors. In terms of reproductive health information about the care of external reproductive organs in women, partners' role is needed to provide information to women about reproductive health to maintain genital health and prevent the transmission of sexually transmitted infections.

Husband's education and support are things that are really needed by couples to focus on genital health and can encourage improving genital hygiene. The partners can provide information and knowledge to improve the cleanliness of the reproductive organs by maintaining harmony in intercourse.

4.4 The relationship between stress and decreased genital hygiene behavior in women

The present study showed that high-stress levels reduced women's behaviors to implement good genital hygiene. A previous study found that women were significantly more bothered by psychosocial stress than men (Beutel et al., 2018). In the present time, life is modern, which affects society's lifestyle, especially for a woman. A lifestyle that is not as desired where expectations do not match reality will result in psychological changes or stress. Stress harms health, especially if it continues and is not managed correctly. Stress is not only dangerous for mental health but also affects physically. From acne and premature signs of aging to hormonal imbalances and heart-health problems — the hormone cortisol is produced as a result of the body's fight-or-flight response to a stressful situation, is capable of doing immense damage to health (Amabebe & Anumba, 2018; Park & Iacocca, 2014).

Stress affects a person's behavior change in carrying out health practices, causing a person's behavior to lead to unhealthy behavior. Stress is a disturbance in body homeostasis or a state of disharmony in response to a threat or challenge that is real or perceived; people who experience stress symptoms will focus more on what they feel than acceptable health practices. It is because they will do copings on their style and based on what they feel (Tsigos et al., 2000). Symptoms that are often caused by stress can affect the body and change a person's behavior to make bad habits (Schneiderman et al., 2005). In this study, women would not practice proper genital hygiene if their stress levels were high. This finding is supported by the American Psychology Association (2015), which argues that stress can affect cognitive processes because it is associated with increased levels of cortisol. This hormone can affect brain function, which will change human health behavior.

5. Implication and limitation

This study provides some practical implications. Genital hygiene behavior in women who have cervical cancer needs to be improved by increasing women's knowledge through access of information about genital hygiene via various media. Policymakers can display advertisements about health either on social media or print media. Health workers play an essential role in providing explanations related to the ways to improve cleanliness of female organs in patients who have cervical cancer. When patients make visits to the hospital, nurses or doctors can provide education about good genital hygiene practices that should be done by women and how to maintain personal hygiene and environmental sanitation.

This study has limitations. First, it did not investigate what types of social media affecting behavioral changes in genital hygiene since nowadays there are many social media like Facebook, Instagram, website, or YouTube. Second, the study utilized questionnaires for data collection, in which some respondents did not complete the questionnaire provided. Future research is advisable to assess related variables that have not been studied, using behavioral theories or risk factors such as reproductive health problems in women. It is because genital hygiene behavior is closely related to reproductive tract infections and sexually transmitted infections. Further research can also focus on what social media are used. Qualitative research to know respondents' perceptions directly to facilitate their real answers is also necessary.

6. Conclusion

This study showed that genital health behaviors in women were influenced by the support and education level of their partners. Women will likely perform the behavior of maintaining female organs when there is support and also exposure to good information from their husbands or from social media. Apart from support and knowledge, a clean and organized environment will make it easy for women to access clean water to maintain the cleanliness of female organs. High-stress levels will make women not focus on their health, especially in carrying out genital hygiene behaviors. It is hoped that the results of this study can increase the awareness of women and their partners to support each other and maintain the cleanliness of the reproductive organs. It is also expected that this study can increase the role of nurses and hospitals in providing education on genital hygiene in women.

Acknowledgment

The authors acknowledge all the participants and the health care professionals in the obstetrics and gynecology department at Dr. Moewardi Hospital Surakarta who have provided assistance in this research.

Conflict of interest

The authors have no conflicts of interest associated with the material presented in this paper.

References

Adibelli, D., Kilinç, N. Ö., Akpak, Y. K., & Kiliç. D. (2014). Genital hygiene behaviors and associated factors in women living in rural areas of Turkey. *El Mednifico Journal*, *2*(3), 210-214. https://doi.org/10.18035/emj.v2i3.163

Alemu, A. K., Hailemariam, Z., Kumie, A., & Tefera, A. W. (2012). *Hygiene and environmental health*, part 1. The Ethiopian Federal Ministry of Health (FMOH) and the Regional Health Bureaus (RHBs). https://www.open.edu/openlearncreate/pluginfile.php-/71966/mod_-resour-ce/content/2/Hyg_Env_Part_1.lo.pdf

Amabebe, E., & Anumba, A. O. C. (2018). Psychosocial stress, cortisol levels, and maintenance of vaginal health. *Frontiers in Endocrinology*, *9*(568). https://doi.org/10.3389/fendo.2018.00568

American Psychological Association. (2015). *How does stress influence behavior?* https://www.apa.org/pubs/highlights/peeps/issue-40#:~:text=Stress%20can%20contribute%20to%20health,that%20can%20influence%20brain%20functioning

Anand, E., Singh, J., & Unisa, S. (2015). Menstrual hygiene practices and its association with reproductive tract infections and abnormal vaginal discharge among women in India. *Sexual & Reproductive Healthcare*, 6, 249–254. https://doi.org/10.1016/j.srhc.2015.06.001

Attieh, E., Maalouf, S., Roumieh, D., Abdayem, P., AbiTayeh, G., & Kesrouani, A. (2016). Feminine hygiene practices among female patients and nurses in Lebanon. *Reproductive Health*, *13*(1), 59. https://doi.org/10.1186/s12978-016-0182-4

Beutel, T. F., Zwerenz, R., & Michal, M. (2018). Psychosocial stress impairs health behavior in patients with mental disorders. *BMC Psychiatry*, *18,* 375. https://doi.org/10.1186/s12888-018-1956-8

Bulut, A. (2020). Genital hygiene behaviors of midwives and nurses working in primary healthcare services and the associated factors. *ACU Sağlık Bil Derg, 11*(1), 72-77

Calik, Y. K., Erkaya, R., Ince, G., & Yildiz, N. K. (2020). Genital hygiene behaviors of women and their effect on vaginal infections. *Clinical and Experimental Health Sciences*, *10*(3), 210-216.

Çankaya, S., & Yilmaz, S. (2015). Factors associated with genital hygiene behaviours in pregnant and non-pregnant women in Turkey. *International Journal of Human Sciences*, *12*(1), 920-932. https://doi.org/10.14687/ijhs.v12i1.3126

Centers for Disease Control and Prevention. (2020). *Bacterial vaginosis (BV) statistics* https://www.cdc.gov/std/bv/stats.htm

Chen, Y., Bruning, E., Rubino, J., & Eder, S. E. (2017). Role of female intimate hygiene in vulvovaginal health: Global hygiene practices and product usage. *Women's Health*, 13, 1–10. https://doi.org/10.1177/1745505717731011

Cohen, S. (1994). Perceived stress scale. Mind Garden, Inc. www.mindgarden.com.

Hailemariam, Z., Kumie, A., & Tefera, A. W. (2012). *Hygiene and environmental health*, part 2. The Ethiopian Federal Ministry of Health (FMOH) and the Regional Health Bureaus (RHBs). https://www.open.edu/openlearncreate/-pluginfile.php/-71967/mod_-resou-r-ce/content/2/Hyg_Env_Part_2.lo.pdf

Hamed, A. G. (2015). The impact of genital hygiene practices on the occurrence of vaginal infection and the development of a nursing fact sheet as prevention massage for vulnerable women. *IOSR Journal of Nursing and Health Science*, *4*(6), 55-64. https://doi.org/0.9790/1959-04655564

Jang, J., Hessel, H., Dworkin, J., (2017). Parent ICT use, social capital, and parenting efficacy. *Computers in Human Behavior*, 71, 395–401. https://doi.org/10.1016/j.chb.2017.02.025

Karadeniz, H., Öztürk, R., & Ertem, G. (2019) Analysis of genital hygiene behaviors of women who applied to women's illnesses and birth policlinic. *Erciyes Medical Journal*, *41*(4), 402–408. https://doi.org/10.14744/etd.2019.37132

Karahan, N. (2017). Development of a genital hygiene behavior scale: Validity and reliability study. *İstanbul Medical Journal*, 18, 157-162. https://doi.org/10.5152/imj.2017.82957

Larasati, A. (2012). Kepuasan perkawinan pada istri ditinjau dari keterlibatan suami dalam menghadapi tuntutan ekonomi dan pembagian peran dalam rumah tangga [Marriage satisfaction in wives in terms of husband's involvement in facing economic demands and division of roles in the household]. *Jurnal Psikologi Pendidikan dan Perkembangan*, *1*(3), 1-6

Leonita, E., & Jalinus, N. (2018). The role of social media in health promotion efforts: A literature review. *INVOTEK Jurnal Inovasi Vokasional dan Teknologi*. *18*(2), 25-34.

Lufiati, D. E., Wijayanti, A. C., & Nugroho, F. S. (2015). *Faktor-faktor yang berhubungan dengan perilaku personal hygiene organ genitalia pada pelajar putri di SMK N 7 Surakarta [Factors related to personal hygiene behavior of genital organs in female students at SMKN 7 Surakarta]* [Thesis, Universitas Muhammadiyah Surakarta]. http://eprints.ums.ac.id/38624/

Maje, L. (2019). Association of vaginal practice to bacterial vaginosis among adolescent girls and young women in South Africa: A risk for HIV acquisition [Dissertation, Simon Fraser University]. https://ir.lib.sfu.ca/item/19823

Mubarak, W. I. (2012).*Ilmu kesehatan masyarakat [Public health science]*. Salemba Medika.

Murthy, L., Fernandes, M., Gawade, V., Chanam, U., Chandra, V., Ramavat, K., Tandon, S., Zacharia, V., Mishra, V., & Patkar, A. (2013). *WASH and health for menstrual hygiene management: Training of trainers manual.* The Water Supply and Sanitation Collaborative Council (WSSCC) and the Government of India (GOI). https://www.wsscc.org/sites/default/files/migrated/2016/07/Training-of-Trainers-Manual-WASH-and-Health-for-Menstrual-Hygiene-Management.pdf

Murti, H., & Lutfiyati, A. (2017). *Hubungan perilaku menjaga kebersihan genetalia dengan kejadian keputihan pada siswi SMA N 1 Galur [The relationship between genital hygiene behavior and leucorrhoea among female students in SMA N 1 Galur]* [Thesis, STIKES Jenderal Achmad Yani Yogyakarta]. http://repository.unjaya.ac.id/2465/1/HATI%20MURTI%20%282213010%29nonfull.pdf

Musyriqoh, S. (2016). *Hubungan dukungan suami dengan perilaku pencegahan terhadap kanker serviks pada wanita dewasa awal di Desa Balung Lor Kecamatan Balung Kabupaten Jember [The relationship between husband support and cervical cancer prevention behavior among women in Balung Lor village, Balung district, Jember district]* [Thesis, Universitas Jember]. http://repository.unej.ac.id/handle/123456789/78503

National Population and Family Planning Board (BKKBN). (2018). *Indonesia demographic and health survey 2017.* Statistics Indonesia (BPS), Ministry of Health (Kemenkes), USAID. https://e-koren.bkkbn.go.id/wp-content/uploads/2018/10/Laporan-SDKI-2017-WUS.pdf

Özyazıcıoğlu, N., Ünsal, A., & Sezgin, S. (2011). The effects of toilet and genital hygiene education on high school students' behavior. *International Journal of Caring Sciences*, *4*(3), 120-125.

Park, C. L, & Iacocca, M. O. (2014). A stress and coping perspective on health behaviors: Theoretical and methodological considerations. *Anxiety Stress Coping*, *27*(2), 123-37. https://doi.org/10.1080/10615806.2013.860969

Pete, P. M. N., Biguioh, R. M., Izacar, A. G. B., Adogaye, S. B. B., Nguemo, C. (2019). Genital hygiene behaviors, and practices: A cross-sectional descriptive study among antenatal care attendees. *Journal of Public Health in Africa*, 10(1), 746. https://doi.org/10.4081/jphia.2019.746

Rahmah, H., Afiyanti, Y., Rachmawati, I. N., Ungsianik, T., Budiati, T., & Wiwit. (2020). Sexuality concerns: A thematic analysis of indonesian nurses' experiences in discussing sexuality with patients. *Jurnal Keperawatan Indonesia, 23*(1), 23–30. https://doi.org/10.7454/jki.v23i1.1173

Sari, H. E, Mudigdo, A., & Dermatoto, A. (2016). Multilevel analysis on the social determinants of cervical cancer in Yogyakarta. *Journal of Epidemiology and Public Health, 1*(2), 100-107. https://doi.org/10.26911/jepublichealth.2016.01.02.03

Schneiderman, N., Ironson, G., & Siegel, S. D. (2005). Stress and health: Psychological, behavioral, and biological determinants. *Annual Review of Clinical Psychology,* 1, 607–628. https://doi.org/10.1146/annurev.clinpsy.1.102803.144141

Sevil, S., Kevser, O., Aleattin, U., Dilek, A., & Tijen, N. (2013). An evaluation of the relationship between genital hygiene practices, genital infection. *Gynecology & Obstetrics, 3*(6), 1-5. https://doi.org/10.4172/2161-0932.1000187

Shah, S. K, Shrestha, S., Maharjan, P. L., Karki, K., Upadhayay, A., Subedi, S., & Milan, G. (2019). Knowledge and practice of genital health and hygiene among adolescent girls of Lalitpur metropolitan city, Nepal. *American Journal of Public Health Research*, *7*(4), 151-156. https://doi.org/10.12691/ajphr-7-4-4

Song, H., Saito, E., Sawada, N., Abe, S. K., Hidaka, A., Shimazu, T., Yamaji, T., Goto, A., Iwasaki, M., Sasazuk, S., Ye, W., Inoue, M., & Tsugane, S. (2017). Perceived stress level and risk of cancer incidence in a Japanese population: The Japan Public Health Center (JPHC)-based prospective study. *Scientific Reports*, 7, 12964. https://doi.org/10.1038/s41598-017-13362-8

Torondel, B., Sinha, S., Mohanty, J. R., Swain, T., Sahoo, P., Panda, B., Nayak, A., Bara, M., Bilung, B., Cumming, O., Panigrahi, P., & Das, P. (2018). Association between unhygienic menstrual management practices and prevalence of lower reproductive tract infections: A hospital-based cross-sectional study in Odisha, India. *BMC Infectious Diseases, 18*(1), 473. https://doi.org/10.1186/s12879-018-3384-2

Tsigos, C., Kyrou, I., Kassi, E., & Chrousos, G. P. (2000). *Stress: Endocrine physiology and pathophysiology*. MDText.com, Inc. https://www.ncbi.nlm.nih.gov/books/NBK278995/

Umami, A., Rahardjo, S. S., & Murti, B. (2018). Path analysis on the biopsychosocial determinants and genital hygiene on cervical cancer at Dr. Moewardi Hospital, Surakarta, Central Java. *Journal of Epidemiology and Public Health, 3*(2), 277-291. https://doi.org/10.26911/jepublichealth.2018.03.02.07

World Health Organization. (2015). *Progress report of the implementation of the global strategy for prevention and control of sexually transmitted infections: 2006–2015.* http://apps.who.int/iris/bitstream/10665/183117/1/9789241508841_eng.pdf.

World Health Organization. (2016). *Global health sector strategy on sexually transmitted infections 2016–2021.* http://www.who.int/reproductivehealth/publications/rtis/ghss-stis/en/

Yasya, W., Muljono, P., Seminar, K. B., & Hardinsyah. (2019). Effects of facebook social media use and online social support on breastfeeding behavior. *Jurnal Studi Komunikasi dan Media*. *23*(1), 71–86

Yusuf, D. F.., & Budiono, I. (2016). Factors related to the practice of menstrual hygiene genitalia in mentally retarded junior high school students. *Journal of Health Education, 1*(1), 56-61.