








Sources of Information and Knowledge of Gonorrhoea in Indonesia

Annisa Tristifany^{1,2}^a, Fatihah Arifah Rahmawati^{1,2}^b, Bella Maharany Syahfira^{1,2}^c, Adhitama Noor Idninda^{1,2}^d, Muhammad Maulana Malik^{1,2}^e, Nina Tiwi Handayani²^f
and Sani Rachman Soleman³^g

¹Professional Medical Degree, Faculty of Medicine, Universitas Islam Indonesia, Yogyakarta, Indonesia

²Ngablak Community Health Center, Magelang, Central Java, Indonesia

³ Department of Public Health, Faculty of Medicine, Universitas Islam Indonesia, Yogyakarta, Indonesia


Keywords: Sources of Information, Knowledge, Gonorrhoea, Indonesia.


Abstract: Gonorrhoea (GO) is the most common sexually transmitted infection (STI) in Indonesia. Many sources of information are influencing knowledge of GO among the general population. This cross-sectional study aimed to analyze the association between sources of information and knowledge about GO in Indonesia. The data were taken from the Demographic Health Survey (DHS) 2018 in Indonesia. Based on a total sampling procedure, 86.257 respondents were identified. The dependent variable was knowledge, and the independent variables were sources of information. The data were analyzed by chi-square and binary regression by SPSS Version 23. Descriptive analysis revealed that the most common source of information was friends (14.8). Chi-square analysis demonstrated that all sources of information were associated with knowledge of GO. Binary regression found that all sources of information had a statistically significant correlation, except for radio. Among them, teachers had the strongest correlation with knowledge of GO ($p < 0.01$, aOR=9, CI 95%=7.89-10.27). Overall, all sources of information assessed in this study were associated with knowledge of Gonorrhoea in Indonesia, except radio. The most commonly used media to obtain knowledge were teachers, colleagues, and books.


1 INTRODUCTION


Gonorrhoea is a sexually transmitted infection (STI) caused by gram-negative bacteria *Neisseria gonorrhoeae* (Piszczek et al., 2015; Hill et al., 2016). According to World Health Organization (WHO), the incidence of GO is increasing by around 78 million new cases every year, while the global prevalence of this disease was 0.8% of females and 0.6% of males in 15–49-year-olds (WHO, 2016; Kirckcaldy et al., 2019). Risk factors of GO are multi-partner sexual intercourse, human immunodeficiency virus (HIV), living in an endemic area, prostitution, low socioeconomic status, and being homosexual if


engaging sexual activity with another person (Ministry of Health Indonesia [Kemenkes], 2014; Putu Yuda Hananta et al., 2016; Kirckcaldy et al., 2019). Patients present to a primary care clinic with discharge from the genital area accompanied by dysuria and or dyspareunia. Gonorrhoea discharge has a specific pattern such as vaginal yeast or bacterial infection, watery, creamy, or slightly green. Burning sensations during urination and increased frequency of urination can also be apparent. Patients also have other symptoms, including lower abdominal pain, fever, and a sore throat. However, it is also possible for people to be asymptomatic (Walker and Sweet, 2011; Dela et al., 2019).


^a <https://orcid.org/0000-0003-4167-5816>


^b <https://orcid.org/0000-0001-8233-7501>

^c <https://orcid.org/0000-0002-9076-4383>

^d <https://orcid.org/0000-0002-8095-2217>

^e <https://orcid.org/0000-0001-9127-1057>

^f <https://orcid.org/0000-0002-0625-0612>

^g <https://orcid.org/0000-0002-2815-818X>

Effective treatment is required to decrease the incidence of GO, including both medication therapy and providing educational information about GO (Rink et al., 2015). Information can affect four components of individual outcomes, including severity, vulnerability, effectiveness, and response efficacy (9). Following educational information provision, awareness is raised, particularly among those who possess factors associated with susceptibility or who are in the high-risk population (Samkange-Zeeb et al., 2011). Sources of information are significant for the transmission of knowledge, attitudes, and behaviour about GO, and these include the internet, books, electronic sources, and direct information from colleagues. The validity of information must be checked to prevent misunderstandings about GO. Nowadays, people receive complete information from the internet and the other unvalidated sources. There is also a tendency to avoid formal sources, such as medical practitioners, due to the stigma about GO; consequently, many people engage in self-medication (Nichter, 1996; Lee and Cody, 2020). For others, family members' role and support are more critical than unvalidated sources (da Silva and Campos Tavares, 2015). Family members must facilitate the knowledge gap, and they may seek medication from a health facility for signs and symptoms of GO. Most people infected with GO tend to be discrete about it due to the risk of stigmatization and of being expelled from their community (14). However, eventually, patients seem to be more comfortable discussing it with their peers (Bhattacharjee et al., 2013).

Concerning knowledge about GO, it is not a guarantee that those with the highest knowledge or level of educational background are more aware of it (Annang et al., 2010). Understanding about GO must be focused on health prevention and promotion programs in the community because it is a preventable disease if people engage in safe sexual behaviour (Inthavong et al., 2020). In addition, peer groups in the community should be activated to share information and discuss GO to focus on prevention and treatment (Edianto et al., 2019). Sharing, counselling, and consulting programs are essential elements in the community to obtain appropriate information. Lastly, education about GO or STIs must be formalized in schools to provide students with additional knowledge (WHO, 1992). The curriculum must cover all aspects of STIs and focus on prevention programs. Studies about health promotion are critical to highlight the phenomena among high-risk populations to prevent STIs spreading. However, government and community empowerment programs

must support both policy and regulation to establish such programs. A health policy should conduct specific interventions through platforms such as printed and electronic media and direct consultation with healthcare workers or teachers. This study aimed to provide information on the types of media that can deliver information and knowledge about GO in the general population. Consequently, prevention and promotion programs can be implemented to avoid unwanted or asymmetrical news about it.

2 MATERIAL AND METHODS

A cross-sectional study design with total sampling was conducted to analyze the association between sources of information and knowledge of GO in Indonesia. The respondents in this study were the adult population: a total of 86.257 participants. There were two variables: the dependent variable was knowledge about GO, and the independent variables included media information such as radio, television, magazine/newspapers, posters, religious institutions, teachers, community gatherings, colleagues, workplaces, the internet, books, and others. The data were taken from the Demographic Health Survey in 2018 (<https://dhsprogram.com/data/available-datasets.cfm>). Permission to use the data was obtained by sending a short proposal to the authorities, without ethical clearance. All variables were analyzed by chi-square and binary logistic test by SPSS version 23.

3 RESULTS

The infection of GO is found predominantly among vulnerable demographics, including those engaged in unsafe relationships, male ex male (MSM), housewives, drivers, and others. However, many people do not understand GO due to their educational background and lack of information. Healthcare workers' role is vital in delivering appropriate sources of information related to signs and symptoms and programs to prevent the spread of the disease. Various media are essential tools to deliver GO information in the community, as presented in Table 1.

According to the data shown in Table 1, all respondents did not have experience and knowledge of GO; however, among media information, colleagues were the most likely to get information about GO, followed by television, the internet, and healthcare workers.

Table 1: Univariate analysis of sources of information and knowledge about GO in Indonesia.

Media	Yes		No	
	n	%	n	%
Radio	626	0.7 %	85.631	99.3 %
Television	9.184	10.6 %	77.073	89.4 %
Magazine/ newspaper	2.474	2.9 %	83.783	97.1 %
Poster	692	0.8 %	85.565	99.2 %
Healthcare workers	3.585	4.2 %	82.672	95.8 %
Religious institution	141	0.2 %	86.116	99.8 %
Teacher	1.477	1.7 %	84.780	98.3 %
Community gathering	1.307	1.5 %	84.950	98.5 %
Colleagues	12.777	14.8 %	73.480	85.2 %
Workplace	1.837	2.1 %	84.420	97.9 %
Internet	3.940	4.6 %	82.317	95.4 %
Books	202	0.2 %	86.055	99.8 %
Others	313	0.4 %	85.944	99.6 %

Media information is essential to the delivery of appropriate information about GO in society. However, the term GO is taboo within the general community, owing to a lack of knowledge and information among various demographics. The stigma around GO is worsening the attempt to prevent unwanted information about it being shared. Many different media are essential to the distribution of information, as presented in Table 2.

According to the analyses presented in Table 2, all information sources correlated with knowledge about GO in Indonesia, except for radio. Among them, teachers were the most strongly correlated with knowledge of GO, followed by colleagues and books. In Indonesia, formal education is a suitable medium to deliver STI information such as GO, because teachers can provide information about it. Every school has a specific teacher that focuses on counselling and has a consulting unit. These teachers guide students in difficult situations during their period of study in schools.

4 DISCUSSION

STIs comprise a group of diseases caused by unsafe sexual behaviour among high-risk populations. Diagnosis of STIs cases such as HIV/AIDS, syphilis and GO are sometimes delayed due to a lack of understanding; such a delay in healthcare access can increase the complications associated with the disease. The media play a role in closing the gap between the onset of symptoms and diagnosis to prevent complications. According to our study, most respondents did not receive sufficient information

about it because most of them did not declare their illness (Suvirya et al., 2018); however, receiving appropriate information is a component of human rights among high-risk populations. Healthcare workers' role is paramount in delivering relevant information rather than inaccurate sources on the internet or social media. Based on the descriptive study above, the most crucial information sources were from colleagues, television, and the internet, respectively. Unfortunately, information from healthcare workers was not dominant. Healthcare workers play an essential role in distributing relevant information and guaranteeing that the information is accurate and providing access to STI prevention programs among students (Borawski et al., 2015). The analytical data strengthened this finding that information about GO by healthcare workers correlated with knowledge among respondents. However, this association is weaker than with teachers, colleagues, books, and other sources. It is very important to disseminate information to society to prevent expelling, stigma and ignoring among the patients (Nyblade et al., 2017). This finding is important to share with the government, to eliminate the stigma and to ensure equal health services for all people. We recommend further study to examine access to healthcare services among patients and investigate their perspectives about treatment to understand how important health worker services are in treating patients with GO.

Sources of information from teachers are the most prevalent in our study. Formal education should be able to transfer knowledge to and guide and prevent students from being exposed to inaccurate information about preventing STIs or reproductive problems among students (Borawski et al., 2015). This finding also stresses the importance of teaching reproductive health as part of the school curriculum, which should be adopted to save further generations from STIs. Despite delivering a curriculum covering reproduction, this seems unfamiliar to some students, but the program must be conducted gradually and comprehensively. In Indonesia's junior and senior high schools, there is a particular unit covering psychological problems among students, called guiding and counselling unit (UBK) that plays a vital role for students facing difficulties during their studies, including reproductive health problems. The role of counsellor or teacher in the school is also important to deliver information and guide students to get relevant news about reproductive issues (Milton et al., 2001; Joachim C. Omeje et al., 2012). We assume that this program did not eliminate the gap of stigma about GO, despite the number of respondents

Table 2: Analysis of bivariate and multivariate sources of information and knowledge about GO in Indonesia.

Media	Chi-square test			Binary logistic test		
	<i>p</i> -value	<i>OR</i>	CI (95%)	<i>p</i> -value	<i>aOR</i>	CI (95%)
Radio	<0.01	5.169	4.311 – 6.196	-	-	-
Television	<0.01	6.837	6.444 – 7.254	<0.01	2.586	2.407 – 2.777
Magazine/Newspaper	<0.01	7.633	6.978 – 8.350	<0.01	2.471	2.203 – 2.770
Poster	<0.01	10.127	8.675 – 11.821	<0.01	2.983	2.430 – 3.662
Healthcare workers	<0.01	7.183	6.644 – 7.766	<0.01	3.236	2.942 – 3.559
Religious institution	<0.01	2.999	1.931 – 4.657	<0.01	0.438	0.253 – 0.760
Teacher	<0.01	13.753	12.364 – 15.297	<0.01	9.004	7.890 – 10.275
Community gathering	<0.01	5.129	4.512 – 5.830	<0.01	2.638	2.257 – 3.083
Colleagues	<0.01	8.638	8.160 – 9.144	<0.01	8.310	7.786 – 8.869
Workplace	<0.01	10.440	9.463 – 11.518	<0.01	3.681	3.256 – 4.163
Internet	<0.01	8.256	7.667 – 8.890	<0.01	3.060	2.784 – 3.364
Books	<0.01	12.633	9.567 – 16.683	<0.01	8.820	6.302 – 12.344
Others	<0.01	5.326	4.137 – 6.855	<0.01	8.805	6.581 – 11.782

receiving less information than those who did not get information about it in this study (1.7 vs 98.3%).

To receive information from colleagues, rather than from teachers, is more prevalent in our study. To share and discuss with a peer group is more comfortable and confidential (Bhattacharjee et al., 2013), but the quality of information given by peer groups should be evaluated because every person has a different experience and so the authenticity of the information cannot be guaranteed. Peer group sharing's critical role should be explored concerning how it can solve the problems associated with GO infections. In the other media sources, printed information is significantly correlated with knowledge of GO, particularly books. Unfortunately, in this data, information on the type of books is not available. Magazines and newspapers are more familiar media to access in the community (Amu and Adegun, 2015), but the content about reproductive health is limited, so readers receive inadequate information about it.

Concerning electronic media such as radio, television, and the internet, these also correlated with knowledge of GO, particularly television. The content quality on GO and related reproductive issues is a concern and should become a focus. Mass media is pivotal for gaining knowledge and information about STIs among young adults, mainly information about safe sexual behaviour (Romer et al., 2009). The government should allocate time to airing news about reproductive health because the electronic media is the easiest way to gain knowledge about GO, to expand awareness and preparedness about STIs.

Reproductive issues are substantive among teenagers and young adults as they are prone to sexual and reproductive problems during their development. This issue is fundamental as it should urge the media to deliver qualified information to increase understanding about these issues. The focus should be

on prevention and promotion programs in the community to avoid spreading communicable diseases related to human behaviour, particularly GO infections. The government should provide greater access to media (printed or electronic) and formalize reproductive health inclusion in the school curriculum.

5 CONCLUSION

In this study, media information correlated with knowledge about GO. The most interesting media are colleagues, television, the internet and healthcare workers, respectively. Among the other media, teachers, colleagues and books are most highly correlated with knowledge of GO. Unfortunately, in this study, respondents tend not to want to receive information from healthcare workers. Healthcare workers play an essential role in delivering information about GO, such as prevention, promotion, health facility access, and treatment. Besides, healthcare workers are the most suitable group to deliver information about GO. Based on this finding, we recommend to the government that they mobilize healthcare workers to focus on health promotion, prevention, and giving priority information about GO to the general population and formalizing STI prevention programs within the school curriculum.

REFERENCES

- Amu, E.O. and Adegun, P.T. 2015. Awareness and Knowledge of Sexually Transmitted Infections among Secondary School Adolescents in Ado Ekiti, South Western Nigeria. *Journal of Sexually Transmitted Diseases*. 2015, pp.1–7.

- Annang, L., Walsemann, K.M., Maitra, D. and Kerr, J.C. 2010. Does education matter? Examining racial differences in the association between education and STI diagnosis among black and white young adult females in the U.S. *Public Health Reports*. 125(SUPPL. 4), pp.110–121.
- Bhattacharjee, P., Prakash, R., Pillai, P., Isac, S., Haranahalli, M., Blanchard, A., Shahmanesh, M., Blanchard, J. and Moses, S. 2013. Understanding the role of peer group membership in reducing HIV-related risk and vulnerability among female sex workers in Karnataka, India. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*. 25(SUPPL.1), pp.46–54.
- Borawski, E., Adams, K., Trapl, E., Hayman, L., Yoder, L. and Lovegreen, L. 2015. Effectiveness of Health Education Teachers and School Nurses Teaching Sexually Transmitted Infections/Human Immunodeficiency Virus Prevention Knowledge and Skills in High School. *J Sch Health*. 85(3), pp.189–196.
- Dela, H., Attram, N., Behene, E., Kumordjie, S., Addo, K.K., Nyarko, E.O., Kyei, N.N.A., Carroll, J.N.A., Kwakye, C., Duplessis, C.A., Adams, N., Garges, E. and Letizia, A.G. 2019. Risk factors associated with Gonorrhoea and chlamydia transmission in selected health facilities in Ghana. *BMC Infectious Diseases*. 19(1), pp.1–8.
- Edianto, Waluyo, A. and Yona, S. 2019. Correlation of family acceptance and peer support group toward sexual behavior risk on MSM with HIV/AIDS in Medan, Indonesia. *Enfermeria Clinica*. 29, pp.7–11.
- Hill, S.A., Masters, T.L. and Wachter, J. 2016. Gonorrhoea – An evolving disease of the new millennium. *Microbial Cell*. 3(9), pp.371–389.
- Inthavong, K., Ha, L.T.H., Anh, L.T.K. and Sychareun, V. 2020. Knowledge of safe sex and sexually transmitted infections among high school students, Vientiane Prefecture, Lao PDR. *Global Health Action*. 13(sup2).
- Joachim C. Omeje, Eskay Michael and Modebelu Josephine Obiageli 2012. Roles of Counsellors in Promoting Sexuality Education for In-School Adolescents in Nigeria. *Journal of Psychology Research*. 2(12), pp.711–718.
- Kirckcaldy, R., Weston, E., Segurado, A. and Hughes, G. 2019. Epidemiology of Gonorrhoea : A Global Perspective Robert. *Sex Health*. 16(5), pp.401–411.
- Lee, A.S.D. and Cody, S.L. 2020. The Stigma of Sexually Transmitted Infections. *Nursing Clinics of North America*. 55(3), pp.295–305.
- Milton, J., Berne, L., Patton, W. and Peppard, J. 2001. School Counsellors' role in sexuality education: What messages about sexual behaviour and sexual responsibility do they give Australian students? *Journal of Psychologists and Counsellors in Schools*. 11, pp.35–50.
- Ministry of Health Indonesia [Kemenkes] 2014. Technical Report: 2013 Rapid Behavioral Survey in Papua. , p.92.
- Nichter, M. 1996. *Self Medication and STD Prevention*. Tucson, Arizona.
- Nyblade, L., Reddy, A., Mbote, D., Kraemer, J., Stockton, M., Kemunto, C., Krotki, K., Morla, J., Njuguna, S., Dutta, A. and Barker, C. 2017. The relationship between health worker stigma and uptake of HIV counseling and testing and utilization of non-HIV health services: the experience of male and female sex workers in Kenya. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*. 29(11), pp.1364–1372.
- Piszczek, J., St. Jean, R. and Khaliq, Y. 2015. Gonorrhoea : Treatment update for an increasingly resistant organism. *Canadian Pharmacists Journal*. 148(2), pp.82–89.
- Putu Yuda Hananta, I., Van Dam, A.P., Bruisten, S.M., Van Der Loeff, M.F.S., Soebono, H. and De Vries, H.J.C. 2016. Gonorrhoea in Indonesia: High prevalence of asymptomatic urogenital Gonorrhoea but no circulating extended spectrum cephalosporins-resistant *Neisseria gonorrhoeae* strains in Jakarta, Yogyakarta, and Denpasar, Indonesia. *Sexually Transmitted Diseases*. 43(10), pp.608–616.
- Rink, E., Montgomery-Andersen, R. and Anastario, M. 2015. The effectiveness of an education intervention to prevent chlamydia infection among Greenlandic youth. *International Journal of STD and AIDS*. 26(2), pp.98–106.
- Romer, D., Sznitman, S., DiClemente, R., Salazar, L.F., Vanable, P.A., Carey, M.P., Hennessy, M., Brown, L.K., Valois, R.F., Stanton, B.F., Fortune, T. and Juzang, I. 2009. Mass media as an HIV-prevention strategy: Using culturally sensitive messages to reduce HIV-associated sexual behavior of at-risk African American youth. *American Journal of Public Health*. 99(12), pp.2150–2159.
- Samkange-Zeeb, F.N., Spallek, L. and Zeeb, H. 2011. Awareness and knowledge of sexually transmitted diseases (STDs) among school-going adolescents in Europe: A systematic review of published literature. *BMC Public Health*. 11(1), p.727.
- da Silva, L.M.S. and Campos Tavares, J.S. 2015. The family's role as a support network for people living with Hiv/AiDS: a review of Brazilian research into the theme. *Ciencia e Saude Coletiva*. 20(4), pp.1109–1118.
- Suvirya, S., Shukla, M., Pathania, S., Banerjee, G., Kumar, A. and Tripathi, A. 2018. Stigma Associated with Sexually Transmitted Infections among Patients Attending Suraksha Clinic at a Tertiary Care Hospital in Northern India. *Indian J Dermatol*. 63(3), pp.469–474.
- Walker, C.K. and Sweet, R.L. 2011. Gonorrhoea infection in women: Prevalence, effects, screening, and management. *International Journal of Women's Health*. 3(1), pp.197–206.
- WHO 1992. *School health education to prevent AIDS and sexually transmitted disease*. Geneva.
- WHO 2016. *Treatment of Neisseria gonorrhoeae*.