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Attitudes of Indonesian health science undergraduates toward sexuality in individuals with intellectual disabilities

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ABSTRACT

Background: Sexuality is a fundamental part of the lives of human beings. However, a significant inequality exists regarding the right of an individual with intellectual disabilities.
Aims: This study aimed to explore the attitudes of undergraduate health science students toward sexuality in individuals with intellectual disability (ID) in Indonesia.
Methods: A cross-sectional study was performed using the Indonesian version of Attitudes toward Sexuality Questionnaires in Intellectual Disability (ASQ-ID). This study involved 617 students in medical, psychology, and public health undergraduate programs.
Results: Among all participants (n = 617, male = 137, female = 480), the attitude towards self-control was found a significant difference among all three health science undergraduates (p = .01). The psychology students had the most favorable attitudes toward self-control compared to other students. The difference was found between medical and public health students and between public health and psychology students with p = .009 and p = .011, respectively. Religion was significantly affected for the non-reproductive sexual behavior subscale (p = .038). The religion was found to have significant effect on the attitude towards nonreproductive sexual behavior subscale (p = .038).
Conclusions: Results show that Indonesian undergraduate students majoring in the health sciences have varying attitudes toward sexuality in individuals with ID. Medical and psychology students have more favorable attitudes toward self-control, whereas public health students have less favorable attitudes. Their religion influencing the attitudes toward nonreproductive sexual behavior.

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What this paper adds

1 This study describes the attitudes of Indonesian health science undergraduates toward sexuality with regard to intellectual disability (ID).
2 Indonesia, an emerging develop country where mostly people are having a strong religious, which may impact on their attitudes
3 This study aims to raise awareness in recognizing the sexual and reproductive health and rights of individuals with ID.

1. Introduction

Sexuality is a valuable and fundamental aspect of human life experiences and is related to sex, gender identity, pleasure, intimacy, sexual orientation, sexual preferences, and reproduction (Evans, McGuire, Healy, & Carley, 2009; Kijak, 2013; World Health Organization, 2006). A previous study classified sexuality into four subscales: sexual rights, parenting, nonreproductive sexual behavior, and self-control (Cuskelly & Gilmore, 2007). Expressing and exploring sexuality i.e., thoughts, desires, beliefs, attitudes, values, behaviors, practices, role, and relationship is a fundamental human right, but it is somewhat constrained in some countries, particularly for people who live in religious communities (Graham & Davies, 2019; World Health Organization, 2006). Definition of sexuality is varied from broad to narrow. Macleod and McCabe conducting a study to define "sexuality" and acknowledged the complexity of sexuality as a construct, and a broad range of topics includes sexual activity (expression and behaviors), desire, passion and/or sexual interest, sexual functioning, physical intimacy, attitudes and/or beliefs related to sexuality, sexual satisfaction, arousal and/or pleasure, emotions related to sexuality, and emotional intimacy (Macleod & McCabe, 2020). Sexuality is an essential aspect of life, just like other basic needs. It needs to be respected by society, especially for individuals with ID (Esmail, Darry, Walter, & Knupp, 2010). It is complicated for individuals with ID to express their sexual behavior, particularly in public areas (Muswera & Kasiram, 2019). Individuals with ID are characterized by impaired cognitive and mental functions and impaired language, motor, and functional skills, including adaptive functioning (American Psychiatric Association, 2013; World Health Organization, 2019), with onset during the development period from infancy through adolescence. The term of intellectual disability is used to describe the significant deficit of intellectual and adaptive functioning based on clinical evaluation. The deficits of intellectual function include reasoning, problem-solving, planning, abstract thinking, judgment, academic learning, and learning from experience (American Psychiatric Association, 2013), while adaptive function deficits include conceptual (memory, language, reading, math reasoning, problem-solving, judgment in new situation), social (awareness of others' thoughts and feelings, empathy, communication skills, develop friendship, social judgment), and practical domains (self-care, task/job responsibilities, and organization, financial management, self-management behavior/emotion) (Patel, Cabral, Ho, & Merrick, 2020).

The sexual life of individuals with ID is a prohibited and restricted topic, including conversations related to sexual intimacy, pleasure, and expression. Most parents of individuals with ID denied having a conversation about sexuality with their children and felt unprepared to educate their children on the subject of sexuality (Pownall, Jahoda, & Hastings, 2012). Furthermore, health professionals showed conservative perspectives about this issue (Tamas, Brkic Jovanovic, Rajic, Bugarski Ignjatovic, & Peric Prkosovacki, 2019). Individuals with ID are often treated as a child and labeled asexual, but they may have excessive sexual behavior and become sex offenders (Azzopardi-Lane & Callus, 2014; Isler, Arslan, Beytut, & Conk, 2009). Therefore, individuals with ID are prone to psychological, verbal, and physical abuse (sometimes even life-threatening abuse) because they often encounter discrimination, fear, and violence from the community. This might happen because of the lack of formal or informal sexuality education in society (Galea, Butler, Iacono, & Leighton, 2004; International Planned Parenthood Federation, 2008; Isler et al., 2009; Swango-Wilson, 2011). Internationally, social policies have been introduced since a decade ago to promote the integration and inclusion of individuals with ID into social life with the basic principle that individuals with ID have the same need for sexuality and intimacy as individuals without ID (Esmail et al., 2010). But in the reality in developing countries, the perception of residential service provider facilities indicates many misconceptions related to the sexuality of individuals with disabilities that can affect infantilization, marginalization, preventing their sexual expression or considering them asexual or over-sexual (Muswera & Kasiram, 2019), even, attitudes of professionals who work at school for special education of individuals with ID toward sexuality show a conservative viewpoints (Tamas et al., 2019). More overly, a study in develop country conducted towards colleagues from ethnic minority, that is, Asian showed similar results. British South Asian (individuals originating from India, Pakistan, Bangladesh, dan Sri Lanka) colleagues' attitudes toward sexuality of were less favorable compared to White British (Sheridan & Scior, 2013).

Attitudes toward sexuality in individuals with ID vary across countries. In developing countries, including Asian countries, individuals with ID and their families are considered a severe health issue because of the restrictions they experience regarding work, marriage, and social interactions; it is even believed that ID is a punishment for bad or unethical behavior (Aldersey et al., 2018; Gabel, 2004; Hodapp & Fidler, 2016; Ngo, Shin, Nhan, & Yang, 2012). A US study found that strong religious and spiritual involvement resulted in slightly less favorable attitudes toward sexuality in individuals with ID (Fioramonti, Ebener, & Arrastia-Chisholm, 2018). On the other hand, the religion of Islam believes that individuals with ID are legally incompetent (Morad, Nasri, & Merrick, 2001). Nevertheless, society is obliged to assess, assist, respect, and give equal life chances to individuals with ID (Morad et al., 2001).

Many factors influence a person's attitudes toward individuals with ID. Prior knowledge and familiarity affect people's attitudes toward individuals with ID (Vignes et al., 2009; Yazbeck, McVilly, & Parmenter, 2004). Previous studies showed that individuals who have a tertiary level of education have a more positive attitude toward individuals with ID (Murray & Minnes, 1994; Yazbeck et al., 2004). Individuals with ID are often in contact with health care workers because such individuals are generally vulnerable to diseases. However, a previous study showed that health care workers have negative attitudes toward individuals with ID (Pelleboer-Gunnink,

Van Oorsouw, Van Weeghel, & Embregts, 2017). Thus, the current study was conducted to describe the attitudes of undergraduate health science students toward sexuality in individuals with ID. After graduation, these health science students will work as health care professionals with all types of patients, including individuals with ID. Therefore, it is important to understand their attitudes toward sexuality in individuals with ID.

2. Material and methods

2.1. Participants

This study was a cross-sectional observational study that used the consecutive sampling method. A total of 617 active undergraduate students majoring in medicine, psychology, and public health in Diponegoro University, Semarang, Central Java, Indonesia, completed the questionnaires. Before data collection, ethical approval was obtained from the Health Research Ethics Committee of the Faculty of Medicine of Diponegoro University (Approval No. 201/EC/KEPK/FK-UNDIP/V/2019).

A total of 3355 undergraduate students were targeted to participate in this study (977 medical students, 890 psychology students, and 1488 public health students). Within 4 months of the online survey's availability, a total of 617 undergraduate students (256 medical students, 160 psychology, and 201 public health students) completed the Attitudes toward Sexuality Questionnaires in Intellectual Disability (ASQ-ID). The response rate was 18.4 % (Fig. 1). The majority of the participants were women (77.8 %), and the average age of all participants was 20.19 ± 1.21 years. Islam is the major religion, followed by Christianity, and the majority of participants declared that their decisions were influenced by religion (88.2 %). Only 7.4 % of participants had a family history with ID (see Table 1).

2.2. Procedure

An online version of the ASQ-ID was shared by student representatives to all active undergraduate students admitted in 2016–2019. Students, both men and women, who agreed to participate in this study signed a consent form electronically before completing two sets of online ASQ-ID, which consists of questions on attitudes toward the sexuality of adult men and women with ID.

2.3. Measurements

The ASQ-ID, which was adopted from Queensland University, Australia (Cuskelly & Gilmore, 2007), was translated from English to Indonesian and then back into English by a certified translation institution; reliability analysis using Cronbach-α showed the value for each subscale are as follow: sexual right = .644; parenting = .783; nonreproductive sexual behavior = .783; self-control = .664; and total scales ASQ-ID = .844, this questionnaire has been used in a previous study (Winarni, Hardian, Suharta, & Ediati, 2018). After reading the instruction and filling out the informed consent online, the participants provided primary demographic data (age, gender, undergraduate study program, current or previous close relationship with individuals with ID, and religion). The participants then completed the ASQ-ID for both men and women with ID. This questionnaire had 2 sets with 28 statements each. The statements are divided into 4 subscales of sexuality: "sexual rights," which consists of 13 statements (2, 5, 10, 13, 15, 16, 17, 18, 19, 22, 26, 28, and 32); "parenting," which consists of 7 statements (1, 6, 11, 20, 25, 29, and 33); "nonreproductive sexual behavior," which consists of 5 statements (3, 9, 12, 23, and 31); and "self-control," which consists of 3 statements (8, 27, and 34). Responses were scored using a

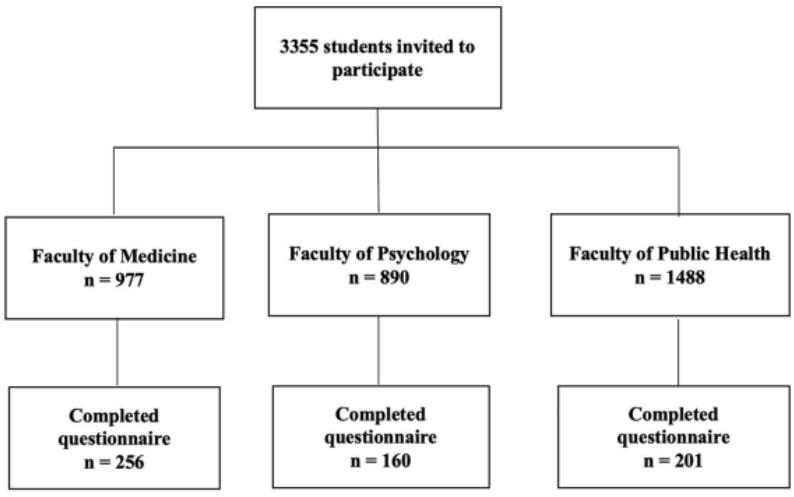

Fig. 1. Flow Chart of the Study Participants.

Table 1
Demographic characteristics of Participants among the three undergraduate programs.

Variable	Undergraduates Program			Total n (%)
	Medicine n (%)	Psychology n (%)	Public Health n (%)	
Age (min - max) yo	21 (18–24)	20 (18–22)	20 (17–26)	20.19 (17–26)
Sex				
Men	75 (29.3)	37 (23.1)	25 (12.4)	137
Women	181 (70.7)	123 (76.9)	176 (87.6)	480
Academic Year				
2014	11 (4.3)	0 (0)	0 (0)	11
2015	56 (21.9)	3 (1.9)	3 (1.5)	62
2016	130 (50.8)	54 (33.8)	68 (33.8)	252
` 2017	33 (12.9)	42 (26.3)	78 (38.8)	153
2018	26 (10.2)	61 (38.1)	52 (25.9)	139
Religion				
Islam	171 (66.8)	126 (78.8)	177 (88.1)	474
Protestant	46 (18)	22 (13.8)	14 (7)	82
Catholic	33 (12.9)	10 (6.3)	8 (4)	51
Buddhism	5 (2)	0 (0)	1 (0.5)	6
Hinduism	1 (0.4)	0 (0)	1 (0.5)	2
Others	0 (0)	2 (1.3)	0 (0)	2
Influence of religion on decision making				
Yes	216 (84.4)	137 (85.6)	191 (95)	544
No	40 (15.6)	23 (14.4)	10 (5)	73
Family history of intellectual disability				
Yes	10 (3.9)	14 (8.8)	22 (10.9)	46
No	246 (96.1)	146 (91.3)	179 (89.1)	571

six-point Likert scale ranging from strongly disagree (1), moderately disagree (2), slightly disagree (3), slightly agree (4), moderately agree (5), and strongly agree (6). A higher score indicated a more favorable attitude. Some questions were reversed or changed to negative statements (marked as "R" in the full questionnaire in Table 1); therefore, a lower score indicates a more favorable attitude.

2.4. Data analysis

Demographic data for each student group, except age, were summarized in counts and percentages (mean and range). The summary counts and percentages for each question and for each subscale were calculated as the combined score of both ASQ-ID toward men and women with ID. Normality data distribution test using Kolmogorov–Smirnov test for each subscale and total scale showed that the data were not normally distributed. Thereafter, the Kruskal–Wallis test followed by Mann-Whitney *U* test for faculty comparison were performed for each question and each subscale. We also used the Mann-Whitney *U* test to analyze the influence of religion in decision making and family history separately for each subscale and total ASQ-ID score. Response of "slightly agree" and higher ($\geq$4) was categorized as a favorable attitude. Further analysis with the univariate general linear model was performed for each subscale of ASQ-ID with sex and study program as the factors. We employed a significance level of .05.

3. Results

Table 2 shows that there were significant differences in attitude scores among students from three undergraduate programs in seven statements ($p < .05$): statement no. 3 (Consenting adult men/women with ID should be allowed to live in a homosexual relationship if they so desire [$p < .001$]), statement no. 8 (Medication should be used as a means of inhibiting sexual desires in men/women with ID [$p = .10$]), statement no. 11 (Men/women with ID should only be permitted to marry if either they or their partners have been sterilized [$p < .001$]), statement no. 13 (Men/women with ID typically have fewer sexual interests than other men/women [$p = .031$]), statement no. 15 (Men/women with ID are unable to develop and maintain an emotionally intimate relationship with a partner [$p = .002$]), statement no. 26 (Advice on contraception should be fully available to women/men with ID whose level of development makes sexual activity possible [$p = .003$]), and statement no. 32 (Marriage should not be as a future option for men/women with ID [$p = .025$]).

There was a significant difference in self-control attitudes between all three health science undergraduates ($p = .01$) and the psychology students had the most favorable attitudes toward self-control compared to other students (see Table 3). Further post-hoc analysis was done and showed the difference of attitudes toward self-control subscale between medical students and public health students ($p = .009$) and between public health students and psychology student ($p = .011$) (see Table 4).

We then analyzed the influence of religion in decision making and family history of ID for each subscale and total ASQ-ID score. Both variables had no effect on the total ASQ-ID score. However, the influence of religion in decision making significantly affected the score for the nonreproductive sexual behavior subscale ($p = .038$) (see Table 5). We further analyzed the ASQ-ID score on the basis of the sex of the respondents and the programs for each subscale. As shown in Table 6, male medical students had the most favorable attitudes toward sexual rights, parenting, and nonreproductive subscales. By contrast, female psychology students had the most

Table 2
The comparison of average score of each question in ASQ-ID grouped for each subscale: Sexual Right, Parenting, Non-Reproductive Sexual Behavior and Self-Control in Men/Women with Intellectual Disabilities among three undergraduate programs.

No	Statement	Undergraduate Program			K–W H (df = 2)	p‡	Effect size
		Medicine	Psychology	Public Health			
		Mean ± Standard Deviation					
	Sexual Rights						
2.	Provided no unwanted children are born and no-one is harmed, consenting adult men/women with an ID should be allowed to live in a heterosexual relationship	4.7 ± 0.91	4.9 ± 0.99	4.5 ± 0.90	4.261	0.119	0.007
5.	Men/women with ID have less interest in sex than do other women (R)	3.6 ± 0.92	3.7 ± 0.95	3.6 ± 0.96	1.164	0.559	0.002
10.	Discussions on sexual intercourse promote promiscuity in men/women with ID (R)	3.8 ± 0.90	3.8 ± 0.92	3.7 ± 0.88	1.981	0.371	0.003
13.	Men/women with ID typically have fewer sexual interests than other men/women (R)	3.5 ± 0.98	3.6 ± 0.95	3.4 ± 0.94	6.960	0.031*	0.011
15.	Men/women with ID are unable to develop and maintain an emotionally intimate relationship with a partner (R)	3.7 ± 0.94	3.7 ± 0.91	3.4 ± 0.90	12.078	0.002*	0.020
16.	Sex education for men/women with ID has a valuable role in safeguarding them from sexual exploitation	5.0 ± 0.88	4.9 ± 0.95	5.0 ± 0.90	1.883	0.390	0.003
17.	In general, sexual behavior is a major problem area in management and caring for men/women with ID (R)	3.1 ± 1.00	3.2 ± 1.02	3.1 ± 0.93	2.586	0.274	0.004
18.	Sexual intercourse should be permitted between consenting adults with ID	4.3 ± 0.90	4.3 ± 0.87	4.3 ± 0.83	.384	0.825	0.001
19.	Group homes or hostels for adults with an intellectual disability should be either all men or all women, not mixed (R)	2.7 ± 1.17	2.6 ± 1.08	2.5 ± 1.06	3.331	0.189	0.005
22.	Men/women with ID have the right to marry	4.9 ± 0.85	4.9 ± 0.86	5.0 ± 0.83	.822	0.663	0.001
26.	Advice on contraception should be fully available to women/men with ID whose level of development makes sexual activity possible	4.6 ± 0.96	4.3 ± 1.06	4.6 ± 0.85	11.735	0.003*	0.019
28.	Marriage between adults with ID does not present society with too many problems	3.5 ± 0.93	3.4 ± 0.95	3.4 ± 0.92	.664	0.718	0.001
32.	Marriage should not be encouraged as a future option for men/women with ID (R)	3.6 ± 1.10	3.6 ± 1.09	3.3 ± 1.00	7.381	0.025*	0.012
	Parenting						
1.	With the right support men/women with ID can rear well adjusted children	4.5 ± 0.94	4.5 ± 1.01	4.5 ± 0.94	.289	0.865	0.000
6.	If men/women with ID marry, they should be forbidden by law to have children (R)	4.6 ± 0.96	4.7 ± 0.98	4.7 ± 0.97	.749	0.688	0.001
11.	Men/women with ID should only be permitted to marry if either they or their partners have been sterilized (R)	4.2 ± 1.06	3.9 ± 1.14	3.8 ± 1.17	15.534	<0.001*	0.025
20.	Care staff and parents should discourage men/women with ID from having children (R)	4.3 ± 1.01	4.3 ± 0.96	4.1 ± 1.02	3.927	0.140	0.006
25.	Sexual intercourse should be discouraged for men/women with an intellectual disability (R)	4.34– 0.99	4.4 ± 0.86	4.3 ± 0.95	1.180	0.554	0.002
29.	Sterilization is a desirable practice for men/women with ID (R)	3.5 ± 0.45	3.5 ± 0.59	3.6 ± 0.54	2.155	0.340	0.003
33.	Men/women with ID should be permitted to have children within marriage.	4.4 ± 0.96	4.3 ± 0.96	4.4 ± 0.93	.780	0.677	0.001
	Non-reproductive sexual behavior						
3.	Consenting adult men/women with ID should be allowed to live in a homosexual relationship if they so desire (R)	2.7 ± 1.40	3.1 ± 1.32	2.6 ± 1.21	17.253	<0.001*	0.028
9.	Masturbation should be discouraged for men/women with ID	4.1 ± 1.12	4.1 ± 1.06	3.9 ± 1.09	1.676	0.432	0.003
12.	Masturbation in private for men/women with ID is an acceptable form of sexual expression	3.9 ± 1.14	3.9 ± 0.99	4.0 ± 0.96	.822	0.663	0.001
23.	It is a good idea to ensure privacy at home for men/women with ID who wish to masturbate	4.2 ± 1.11	4.1 ± 1.05	4.2 ± 1.01	3.310	0.191	0.005
31.	Masturbation should be taught to men/women with ID as an acceptable form of sexual expression in sex education courses	3.8 ± 1.26	3.8 ± 1.08	3.8 ± 1.03	.369	0.831	0,001
	Self-Control						
8.	Medication should be used as a means of inhibiting sexual desires in men/women with ID (R)	4.1 ± 1.09	4.1 ± 1.05	3.8 ± 1.08	9.234	0.010*	0,015
27.	Men/women with ID are more easily stimulated sexually than people without ID (R)	3.9 ± 0.88	3.9 ± 0.89	3.7 ± 0.9	3.980	0.137	0,006
34.	Men/women with ID have stronger sexual feelings than other men/women (R)	3.8 ± 0.86	3.9 ± 0.91	3.7 ± 0.85	4.137	0.126	0,007

Notes: * Significant ($p < .05$); ‡ Kruskal Wallis; R (Reverse); # statement number; K-W H = Kruskal Wallis H test value; df = degree of freedom.

Table 3
Average total score of ASQ-ID among undergraduate students from the Faculty of Medicine, Psychology, and Public Health program.

Subscales	Undergraduate Program			K-W H Value (df = 2)	p‡	Effect Size
	Medicine Mean ± SD	Psychology	Public Health			
Sexual Rights	50.92 ± 5.4	50.44 ± 5.4	49.89 ± 5.0	3.774	.152	.006
Parenting	29.96 ± 4.3	29.65 ± 4.2	29.31 ± 4.4	2.244	.326	.003
Non-reproductive sexual behavior	18.75 ± 4.4	19.01 ± 3.9	18.46 ± 3.5	2.020	.364	.003
Self-control	11.78 ± 2.2	11.94 ± 2.3	11.26 ± 2.2	8.993	.01*	.014
Total	111.41 ± 12.3	111.70 ± 11.9	108.93 ± 11	4.219	.12	.006

Notes: * Significant ($p < .05$); ‡ Kruskal Wallis; K-W H = Kruskal-Wallis H test; df = degree of freedom.

Table 4
Comparison subscale and total score of ASQ ID among undergraduate students from the Faculty of Medicine, Psychology, and Public Health program.

Subscale	Faculties comparison	M-W U	p ‡
Sexual Rights	Medicine vs Psychology	19148.0	.264
	Medicine vs Public Health	23071.5	.058
	Public Health vs Psychology	15416.0	.500
Parenting	Medicine vs Psychology	20058.5	.724
	Medicine vs Public Health	23684.5	.145
	Public Health vs Psychology	15099.0	.319
Non-reproductive sexual behavior	Medicine vs Psychology	19823.0	.581
	Medicine vs Public Health	24513.5	.386
	Public Health vs Psychology	14634.0	.142
Self-control	Medicine vs Psychology	19877.0	.612
	Medicine vs Public Health	22100.0	.009*
	Public Health vs Psychology	13572.0	.011*
Total score ASQ-ID	Medicine vs Psychology	20449.5	.980
	Medicine vs Public Health	23092.0	.060
	Public Health vs Psychology	14454.5	.099

Notes: * Significant ($p < .05$); ‡Mann-Whitney *U* test; M-W U: Mann-Whitney U.

Table 5
The differences of ASQ-ID score for each subscale according to religion influence and family history with ID.

Subscales	Religion influence				Family History with ID			
	Yes (N = 544) Mean ± SD	No (N = 73)	M-W U Value (df = 2)	p ‡	Yes (N = 46) Mean ± SD	No (N = 571)	M-W U Value (df = 2)	p ‡
Sexual Rights	50.3 ± 5.16	51.5 ± 6.32	18290.0	0.273	50.3 ± 5.63	50.5 ± 5.30	12754.5	.745
Parenting	29.6 ± 4.22	30.1 ± 4.79	18345.5	0.291	29.6 ± 4.71	29.7 ± 4.26	13113.0	.986
Nonreproductive sexual behavior	18.6 ± 3.99	19.9 ± 4.03	16895.5	0.038*	18.0 ± 4.44	18.8 ± 3.98	11806.5	.254
Self-control	11.6 ± 2.22	11.8 ± 2.44	19135.5	0.613	11.8 ± 1.93	11.6 ± 2.27	13040.5	.936
Total	110.1 ± 11.38	113.3 ± 14.16	17610.5	0.116	109.7 ± 13.06	110.6 ± 11.67	12685.0	.700

Notes: * Significant ($p < .05$); ‡ Mann-Whitney *U* test; M-W U = Mann-Whitney U; df = degree of freedom.

favorable attitudes toward self-control. However, there were no significant differences in the ASQ-ID score between male and female students in the three undergraduate programs across the subscales.

4. Discussion

In general, there was no differences of total ASQ-ID scores between three health science undergraduate programs however further analysis showed that certain subscales were significantly different between three groups and between two groups. This study indicated that medical and psychology undergraduate students had more favorable attitudes, whereas public health undergraduate students had less favorable attitudes. This result could be explained by the fact that a public health undergraduate program focuses on health promotion and disease prevention to improve community health and health care delivery for individuals (Kershaw et al., 2017).

Table 6
The differences of ASQ-ID score for each subscale between man and woman respondents of three undergraduate programs.

Subscales	Undergraduates Program						F value (df = 2)	p§	Effect Size
	Medicine		Psychology		Public Health				
	Men	Women	Men	Women	Men	Women			
Sexual Rights	51.5 ± 6.16	50.7 ± 5.12	51.2 ± 5.06	50.2 ± 5.48	49.1 ± 4.84	50.0 ± 5.10	1.017	.362	.009
Parenting	30.3 ± 4.48	29.8 ± 4.22	29.7 ± 4.98	29.6 ± 3.96	29.1 ± 5.26	29.3 ± 4.23	.259	.772	.004
Non-Reproductive and Sexual Behavior	19.6 ± 4.25	18.4 ± 4.47	18.6 ± 4.70	19.1 ± 3.71	17.7 ± 2.65	18.6 ± 3.57	2.848	.059	.005
Self-Control	11.7 ± 2.36	11.8 ± 2.15	11.3 ± 2.43	12.1 ± 2.24	11.0 ± 1.88	11.3 ± 2.26	.906	.405	.008
Total	113.1 ± 13.08	110.7 ± 11.89	110.8 ± 11.75	111.1 ± 11.84	106.9 ± 10.6	109.2 ± 11.03	1.413	.244	.011

Notes: * Significant ($p < .05$); § General Linier Model Univariate; df = degree of freedom.

Therefore, public health undergraduate students have less knowledge about the sexual rights of individuals with ID. This finding was consistent with that of a study conducted in the Czech Republic, which exclaimed that attitudes were more favorable on nonreproductive sexual behavior and less favorable on the sexual rights subscales (Cuskelly & Gilmore, 2007; Jana & Dana, 2009).

Similar result was observed for the parenting subscale, which is related to attitudes toward individuals with ID in regard to whether they are permitted or deserve to have children in marriage as medical and psychology undergraduate students had more favorable attitudes, whereas public health undergraduate students had less favorable. This finding is similar to that of a previous study that highlighted that knowledge is the most significant predictor; therefore, a person with higher understanding will have a more favorable attitude (Banwari, Mistry, Soni, Parikh, & Gandhi, 2015). Medical undergraduate students had better knowledge about family planning options, such as sterilization, than psychology and public health undergraduate students; therefore, medical undergraduates had the most favorable attitude toward parenting (Banwari et al., 2015). Married women with mild ID lack understanding of their sexual rights, including decision on sterilization, and their parenting responsibility in taking care and raising a child. Moreover, decision making regarding sexual right and parenting issues were constrained by their families and health professionals without considering the essential human rights (Chou, Lu, & Pu, 2015). However, a study conducted in Iceland concluded that a sterilization procedure would cause emotional responses and disappointments in women with ID who underwent sterilization without their consent (Chou & Lu, 2011; Stefánsdóttir, 2014; Tilley, Walmsley, Earle, & Atkinson, 2012). In conclusion, it is necessary for health professionals to recognize the desire and need of women with ID to become a parent while considering the circumstances of their family.

Interestingly, the results of the self-control subscale had significant differences among the three student groups in this study. The results indicated that the study participants perceived that individuals with ID have difficulty controlling their sexual desires. A less favorable attitude toward self-control might also indicate that these students have prejudice toward the inability of individuals with ID to control their sexual drive; this leads to a perception that they are weak or dependent persons, particularly to parents or family members (Manor-Binyamini & Schreiber-Divon, 2019). Individuals with ID often like physical touch and sexual expression of love, but it is difficult for them to receive sex education to protect themselves from unhealthy sexual behavior or to manage their sexual arousal, which often puts them in vulnerable positions (Cheausuwantavee, 2002; Medina-Rico, Lopez-Ramos, & Quinones, 2017).

Psychology students had the most positive attitude in the nonreproductive sexual behavior subscale, and this is similar to a previous study that concluded that psychology students had the most favorable attitudes toward homosexuality (Papadaki, Plotnikof, Gioumidou, Zisimou, & Papadaki, 2015). Students majoring in psychology are trained to recognize individual differences and develop empathy toward minorities. Furthermore, they receive sufficient knowledge about human sexuality, including sexual orientation. Therefore, knowledge of sexuality may lead to more favorable attitudes toward sexuality (Korhonen, Kylma, Houtsonen, Valimaki, & Suominen, 2012; Nea, Wicaksana, & Rohmawaty, 2018; Sabat et al., 2017).

Our result showed that there was no gender difference in all sexuality subscales in this study, which indicate that in our study the gender difference may not as huge as it was. Previous study support our study that gender differences are actually small (Petersen & Hyde, 2011). Gender difference in sexuality is an interesting topic in sexual behavior and attitude study, the most is predicted that men have more favorable attitudes toward sexuality than women (Lefkowitz, Shearer, Gillen, & Espinosa-Hernandez, 2014). Societal gender equality and culture are most likely to have implications for gender differences in sexuality (Petersen & Hyde, 2011). Gender, age, knowledge, and culture concerning ethnicity and familiarity, including a close relationship with an individual with ID, have been explored in relation to attitudes toward sexuality in individuals with ID (Arousell & Carlbom, 2016; Griffin, Summer, McMillan, Day, & Hodapp, 2012; McManus, Feyes, & Saucier, 2011; Wahlen, Bize, Wang, Merglen, & Ambresin, 2020). In contrast with the most theory, previous studies concluded that men had less favorable attitudes toward sexuality in individuals with ID than women (Bossaert, Colpin, Pijl, & Petry, 2011; Li, Tsoi, & Wang, 2012; Pynor, Weerakoon, & Jones, 2005). Similar studies also reported that female university students were likely to have favorable attitudes toward nonheterosexuality than male university students (Korhonen et al., 2012; Sabat et al., 2017; Worthen, 2012). A study in India found that medical students who had inadequate knowledge of homosexuality had less favorable attitudes, in contrast, medical students who had more knowledge of homosexuality had more positive attitudes toward homosexuality (Banwari et al., 2015; Kar, Mukherjee, Ventriglio, & Bhugra, 2018).

Similar to previous study, wherein participants who admitted that their religion influences their decision had significantly more

unfavorable attitudes in this study. In addition to educational background, a study mentioned that religious individuals have a more unfavorable attitude in addressing homosexuality than nonreligious individuals, thus, individuals who hold any denomination rejected homosexuality (Adamczyk & Pitt, 2009). Hinduism rejected homosexuality the most, followed by Islam and Christianity. A study conducted in Morocco found that in Islam, homosexuals are considered evil and may be imprisoned or even sentenced to death (Janssen & Scheepers, 2019). The same manner applies in Christianity, which believes that homosexuality is a morally wrong act and is considered a heinous, heretical, and sick act (Subhi & Geelan, 2012). A previous study conducted in China discovered that same-sex sexual behavior was always considered wrong (Xie & Peng, 2018).

Compared with developed countries (e.g., Australia and the United States), Indonesia had the lowest average score in all subscales, i.e., sexual rights, parenting, nonreproductive sexual behavior, and self-control (Ditchman, Easton, Batchos, Rafajko, & Shah, 2017; Meaney-Tavares & Gavidia-Payne, 2012). This can be attributed to the strong religious and cultural beliefs of people in Asia, particularly Indonesians (Hackett, Kramer, Marshall, Shi, & Fahmy, 2018). A previous study found that religion and culture were very strong predictors for negative attitudes toward sexuality, particularly for statements that explored very sensitive issues regarding cultural norms and religious beliefs associated with immorality and social judgment (Arousell & Carlbom, 2016; Benomir, Nicolson, & Beail, 2016). A study in the United Kingdom concluded that South Asian participants expressed less favorable attitudes toward the sexual rights of people with ID than Caucasian Westerners (Sankhla & Theodore, 2015). Furthermore, individuals who live in communities that adhere to horizontal individualism and horizontal collectivism (i.e., communities where equality is emphasized) have more favorable attitudes than individuals who live in communities that adhere to vertical individualism and vertical collectivism system (i.e., communities where hierarchy is highlighted) (Ditchman et al., 2017).

4.1. *Strengths and limitations of the study and the implication*

The electronic survey might have caused a lack of opportunity for participants to clarify or deliver questions related to the statements, thus affecting the level of understanding and interpretation of participants and influencing the attitudes. However, the ASQ-ID comprised some sensitive statements; therefore, an electronic survey may ensure truthful answers, particularly for socially undesirable statements such as homosexuality and masturbation. This study was conducted towards health science undergraduates from one university, while Indonesia is an archipelagic country with a huge diversity of culture and religious beliefs. Further qualitative and quantitative study involving larger samples from different universities across the country to explore the unfavorable attitudes among health science undergraduates will provide better understanding of the attitude toward sexuality for ID.

This study highlights the need of education programs on the sexuality and reproductive health of individuals with ID for both healthcare professionals and the community. Policy makers should encourage interdisciplinary education and training programs for health care students and professionals to increase their knowledge and skills; to improve their awareness, respect, and attitudes; and to ensure that they will advocate for the sexual and reproductive health rights (SRHRs) of individuals with ID. Healthcare professionals should strive to increase their awareness and knowledge of members of the community, including families, teachers, and community leaders, to improve their assertiveness and to empower their direct social action in protecting the SRHRs of individuals with ID.

5. Conclusions

Medical students have the most favorable attitudes toward sexual rights and parenting, whereas psychology students have the most favorable attitudes toward nonreproductive sexual behavior. Medical and psychological students have more favorable attitudes toward the self-control, while public health students have less favorable attitudes. Undergraduates' religion has an impact on their attitudes toward sexuality in ID.

CRediT authorship contribution statement

Desiyana Evlyn conducting a research and investigation process, specifically performing the experiments, or data/evidence collection; processed the experimental data; performed the analysis; drafted and finalized the manuscript in consultation with supervisors. **Ferdy Kurniawan Cayami** planned and conducting a research and investigation process, specifically performing the experiments, or data/evidence collection and validation; specified the finding of study; provided critical feedback; and helped drafted and finalized the manuscript. **Hardian** develop the methodology, processed the experimental data; performed the analysis and verified the statistical analysis; provide critical feedback on the results (based on statistical analysis); and finalized the manuscript. **Annastasia Ediati** helped planned the experiment especially the tools; specified and supervised the finding of study; provided critical feedback; and helped shape the research and finalized the manuscript. **Agustini Utari** planned the experiment; helped supervise the project; specified and supervised the finding of study; provided critical feedback; and helped shape the research and finalized the manuscript. **Tri Indah Winarni** conceived the original idea; conceived and planned the experiment; supervised the project; specified and supervised the finding of study; supervised, provided critical feedback and helped shape the research and finalized the manuscript. This manuscript has not been published previously and it is not under consideration for publication elsewhere. This manuscript has been read and approved by all authors prior to submission.

Declaration of Competing Interest

All author declare there is no conflict of interest regarding this publication.

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