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Research

Sexual risk behaviour and its associated factors among university students in Malaysia

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Abstract

Introduction Sexual risk behaviour (SRB) is a high-risk act that often led to many reproductive health psychological related issues. Such behaviour is becoming higher among university students, and this has been one of the major public health concerns worldwide.

Objective The aim of this study was to determine the prevalence of sexual risk behaviour (SRB), and the factors associated to this behaviour among students attending universities in Malaysia. This was a nationwide research study which may serve as a baseline local data which for policy makers to strengthen the current sexual reproductive health intervention and prevention programmes.

Methods A nationwide cross-sectional survey was conducted in 28 universities in Malaysia. Stratified random sampling was applied. It was an online questionnaire that consisted of participants' socio-demographic background, academic background, substance abuse, history of childhood abuse, religiosity, knowledge on sexuality, attitude on pre-marital sex, parents' parenting behaviour, peer influence and SRB. Data was analysed using SPSS 29 software. Descriptive statistics were computed for all variables, whereby the association between SRB and variables above were analysed using logistic regression analysis. The level of significance was set at $p < 0.05$.

Results This study recruited 1172 respondents. The prevalence of SRB among the university students was found to be 7.2%. The respondents' mean age was 20.16 ± 1.66. Smoking/vaping history (AOR 5.91 (3.49–10.01)), alcohol use (AOR 1.93 (1.10–3.40)), age (AOR: 1.88 (1.14–3.12)), peer pressure (AOR 1.10 (1.04–1.17)), father care (0.96 (0.93–0.99)) and non-organized religious activity (NORA) (AOR 0.72 (0.63–0.84)) were found to be statistically significant. Protective factors were father care and NORA. The higher the father care and NORA, the less likelihood the students would engage in SRB.

Conclusion Prevalence of SRB among university students was 7.2% and the factors associated with SRB were age, smoking status, alcohol use, peer pressure, fathercare and NORA. Preventive plans of such behaviour must be made parallel to the needs of the youth as this generation represents the future of the country.

Keywords Health risk behaviour · Higher education · Sexual health · Sexual risk behaviour · Students

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1 Introduction

Sexual risk behaviour (SRB) is a major public health concern worldwide. SRB is characterized by high-risk acts, including having premarital sex, unprotected sex, and multiple partners [1]. These behaviours often result in multiple reproductive health problems and psychological related issues [1, 2]. It was reported that only 2.5% of youths in ASEAN countries were engaged with SRB [3]. However, according to recent local data, the prevalence of SRB among adolescents was almost triple the amount (7.3%) [4] and staggeringly even higher among university students (20%) [5].

University students are mostly young adult (aged 15–24 years). This population often gets overlooked as they are deemed the healthiest population. However, growing up, their biological, physical, and psychological aspects are developing rapidly, increasing their curiosity about their surroundings. This encourages them into experimenting with various new activities including risky sexual activity and substance abuse which later lead to poor health and lifestyle [6]. Therefore, students have the highest tendency to engage with SRB and it is an alarming issue for this generation.

SRB can have detrimental effects, including the potential for illegal abortion, baby dumping due to an unintended pregnancy, sexually transmitted infections like HIV that can impair sexual and reproductive health, and many more. Many factors have been shown to predispose to SRB and these can be grouped into three aspects: self, family, and peer factor. From the literature, factors found to be associated with SRB include their socio-demographic background, religiosity [7], knowledge and attitude on sexual health [8, 9]. From the parental aspect, parental bonding with the young adults is also seen to be associated with SRB [10, 11], and this is similar to peer aspect [11, 12].

Many studies have established on the association between SRB and its factors. However, a very little in number of studies were conducted in Malaysia. The studies were mainly focusing on a single institution of a population. Thus, it is crucial to conduct nationwide research in the local community so it can benefit the policy makers in planning a better preventive and intervention strategies that suits the university students. SRB among this population has been a concern that need to be tackled as they are the future leaders of the country. Therefore, by focusing on both SRB and common mental health illness in Malaysia; depression, anxiety, and stress, it is hoped that an effective preventive and intervention module could be designed from the output of this current project.

The objectives of this study were to determine the prevalence of sexual risk behaviour and associated factors among students attending public universities in Malaysia. This study employed the Problem-Behaviour Theory (PBT) proposed by Jessor & Jessor to understand the underlying mechanisms of SRB [13]. The findings of this study were expected to contribute significantly to the existing knowledge on SRB among Malaysian young adults. This was a nationwide research study which has not been explored and thus, may serve as a baseline local data which can be used by other researchers and policy makers to further strengthen the current sexual reproductive health in terms of intervention and prevention programmes.

2 Methods

2.1 Study design and population

A cross-sectional study was conducted involving students attending public universities in Malaysia from June 2021 to December 2021.

2.2 Sampling technique

Two-stage sampling was used. First, to select which institutions, stratified random sampling was employed. Malaysia was divided into five regions—northern, southern, eastern, central, and western. For each region, the number of respondents to be recruited was calculated in proportion to the region's distribution of university students. A random generator was used to select tertiary institutions from six regions, where 32 institutions were selected. Out of this, 28 institutions agreed to participate. Subsequently, convenience sampling was used to recruits respondents. They were approached via gatekeepers from each institution.

2.3 Data collection

Students' representative emailed a link to the list of students for recruitment. Some were reached via WhatsApp™. The link contained respondent's information sheet and informed consent. Informed consent was obtained from all individual participants included in the study Those who were self-reported to meet the inclusion criteria (18–24 years old, Malaysian citizen, able to literate in Malay or English language), would be given a link to access the questionnaire.

2.4 Sample size

The sample size was calculated based on the prevalence of SRB of 20% [3], with the significance level set at 0.05 and considering 80% non-response rate for online surveys, the minimum sample size was 443 participants.

2.5 Study instruments

A self-administered online questionnaire was used to collect data. The questionnaire consisted of three main components: self-system, parental-system, and peer-system variables.

2.6 Self-system variables

The self-system variables included sociodemographic background, academic background, substance use, history of adverse childhood experiences (ACEs), knowledge of sexuality, religiosity, and attitudes toward premarital sexual contact.

2.7 Adverse childhood experiences (ACEs)

ACEs was assessed based on the types of child abuse, outlined by the Center for Disease Control and Prevention (CDC) and Ministry of Health Malaysia (MOH) which include physical, sexual and emotional abuse, as well as neglect and negligent treatment of children. These four items were asked using dichotomous question: yes/no. A 'yes' to any of the item scores one. The scores were totaled (range 1–4), and a higher score indicates a greater number of adverse childhood experiences in individuals. A reliability test during pilot study demonstrated strong internal reliability (Cronbach alpha = 0.8).

2.8 Religiosity

Religiosity was measured using the Duke University Religion Index (DUREL), a validated five-item instrument that assesses three dimensions: Organized Religious Activity (ORA), Non-Organized Religious Activity (NORA), and Intrinsic Religiosity (IR) [14]. The original DUREL has demonstrated high internal consistency (Cronbach's alpha = 0.78–0.91) while the Malay-translated version (DUREL-M) also exhibited good internal reliability (Cronbach's alpha = 0.8) [15]. ORA refers to religious activities conducted in formal and public setting whereas NORA includes private religious practices. IR represents religious engagement as an intrinsic and ultimate purpose [14].

2.9 Knowledge of sexual health

Respondents' sexual health knowledge was assessed using a six-item questionnaire previously validated in a prior study, with moderate reliability ($\kappa = 0.41$) [16]. The total possible score ranged between 0 and 17 with higher scores indicating greater knowledge of sexual health.

2.10 Attitudes toward premarital sex

Attitudes toward premarital sex were measured using a four-items questionnaire on a four-point Likert scale. This validated questionnaire demonstrated strong internal reliability (Cronbach's alpha = 0.85) [16]. The total score ranged between 4 and 16, where higher scores indicated a more non-permissive attitude toward premarital sex.

2.11 Parental-system variables: parental bonding

Parental bonding was assessed using the Parental Bonding Instrument (PBI), which evaluates participants' perceptions of their parents' parenting behaviors [17]. The PBI has been validated and translated into Malay (PBI-M) [18]. The instrument consists of three domains, scored separately for mother and father, using a four-point Likert scale:

1. Parental Care (10 items; total score: 10–40)
2. Parental Control (5 items; total score: 5–20)
3. Parental Autonomy (5 items; total score: 5–20)

Higher scores in each domain reflect greater parental care, control, and autonomy.

2.12 Peer-system variables: peer influence

Peer influence was measured using the Peer Pressure Scale (PPS), a validated nine-item instrument with strong reliability (correlation coefficient = 0.75) [19]. The total score ranged from 9 to 36 with higher scores indicating greater susceptible to peer influence.

2.13 Sexual risk behaviors (SRB)

To assess sexual risk behaviors, participants were first asked whether they had ever engaged in sexual activity. Those who answered "Yes" were further assessed using a five-item instrument adapted from a previous local study. The total possible score ranged from 1 to 5 with a cut off score of 1, where participants who responded "Yes" to any item were classified as engaging in SRB. The instrument demonstrated good reliability (Cronbach's alpha = 0.85) [19].

2.14 Data collection

Gatekeepers were recruited to assist in reaching the respondents, namely, the student representative council and student affair staff. Prior to the recruitment, a link to the informed consent was given and eligibility was screened. Gatekeepers emailed the link to a list of students. Some were reached via WhatsApp™. Those who self-reported to fulfil the inclusion criteria were given a link to access the questionnaire, however those who self-reported not eligible to participate, would be terminated and excluded from the study.

2.15 Statistical analysis

Data were analysed using SPSS version 27. Descriptive statistics were computed for all variables in which the categorical variables were reported as frequencies and percentages, whereas continuous variables were reported as means and standard deviations. The association between independent variables and sexual risk behaviors (SRB) was initially assessed using simple logistic regression. Prior to this, key assumptions were checked, SRB (dependent variable) was binary, multicollinearity among independent variables was checked for any violation using the Variance Inflation Factor (VIF) and all values were accepted. Clinically important variables regardless of *p* value in the univariate

analysis were subsequently included in a multivariable logistic regression model to identify independent factors of SRB. Statistical significance was set at $p < 0.05$.

3 Results

Of 1206 students who responded to the study, 1171 respondents have successfully completed the survey and fulfilled the inclusion criteria. The response rate of this study was 97.1%.

Table 1 Socio-demographic characteristics ($n = 1171$)

Variables	Frequency (*n*)	Percentage (%)	Mean ± SD
Gender			
Male	351	30.0	
Female	820	70.0	
Age			20.16 ± 1.66
18–20 years old	706	60.3	
21–24 years old	465	39.7	
Race			
Malays	730	62.3	
Non-Malays	441	37.7	
Religion			
Muslims	779	66.5	
Non-Muslims	392	33.5	
Living with			
With family	1044	89.2	
Without family	127	10.8	
Current relationship status			
Single/in a relationship	1168	99.7	
Married	3	0.3	
Parents' marital status			
Married	988	84.4	
Others	183	15.6	
Household income			
<RM 4849 (low-income)	685	58.5	
RM 4850–10,959 (middle-income)	357	30.5	
>RM 10,960 (high-income)	129	11.0	
Institution			
Public	589	50.3	
Private	582	49.7	
Field of study			
Science	449	38.3	
Social science	722	61.7	
Substance abuse			
Smoking history			
Yes	181	15.5	
No	990	84.5	
Alcohol intake			
Yes	209	17.8	
No	962	82.2	
Drugs			
Yes	10	0.9f	
No	1161	99.1	

3.1 Socio-demographic characteristics of the respondents

The average respondents' age was 20.16 ± 1.66 years. Most of the respondents age ranged between 18 and 20 years old (60.3%, *n* = 706), female students (70%, *n* = 820), Malays (62.3%, *n* = 730), Muslims (66.5%, *n* = 779), staying with family (89.2%, *n* = 1044) and were studying at public institutions (50.3%, *n* = 589). A small portion of students reported substance use such as smoking cigarettes/vaping (15.5%, *n* = 181), drinking alcohol (17.8%, *n* = 209) and using drugs (0.9%, *n* = 10). Table 1 illustrates the relevant sociodemographic characteristics of the respondents.

3.2 Self, parental and peer factors

Overall mean score of adverse childhood experiences (ACEs) was 0.22 ± 0.61, indicating not many youths encountered adverse childhood experiences. Of the three religiosity domains, intrinsic religiosity (IR) reported a significantly higher degree of religiosity, with moderate non-organizational religious activity (NORA) and organised religious activity (ORA). The mean scores were 12.73 ± 3.23 for intrinsic religiosity (IR), 4.24 ± 1.96 for non-organizational religious activity (NORA) and 4.82 ± 1.57 for organised religious activity (ORA). The mean scores for attitude towards pre-marital sex was 12.42 ± 3.43 where most youths show a non-permissible attitude towards pre-marital sex. The mean scores for father care were 29.34 ± 7.64, suggesting most youths received sufficient care from the father. The mean for peer pressure was 21.02 ± 3.64, emphasising that the youths were receiving high pressure from the peers (Table 2).

3.3 Distribution of sexual risk behaviour by items

Table 3 depicts the distribution of SRB by items. The overall prevalence of SRB among the students was 7.2% with a mean score of 0.07 ± 0.26. 9.5% of these students had their sexual debut earliest before the age of 16, while the majority (90.5%) had a later sexual debut. About one third of the students claimed to have multiple sexual partners and 28.6% of the SRB students did not practice protected sex. 11 (13.1%) students claimed to have a history of sex with high-risk sexual partners.

3.4 The factors associated with SRB

Variables with *p* value <0.25 from single logistic regression were further analysed using multiple logistic regression to identify the factors associated with SRB among the youths. Table 4 shows respondents aged 21–24 years old have 1.88 higher odds of engaging in SRB (AOR: 1.88; 95% CI: 1.14–3.12, *p* = 0.014) than those aged 18–20 years old. Those

Table 2 Multi-system factors associated with sexual risk behavior

Variables	Mean ± SD	Range score
Self-system factors		
Adverse childhood experiences	0.22 ± 0.61	0–4
Organizational religious activity (ORA)	4.82 ± 1.57	1–6
Non-organizational religious activity (NORA)	4.24 ± 1.96	1–6
Intrinsic religiosity (IR)	12.73 ± 3.23	3–15
Knowledge on sexuality	10.09 ± 3.75	0–17
Attitude towards pre-marital sex	12.42 ± 3.43	4–16
Family-system factors		
Mother care	31.96 ± 6.52	10–40
Mother control	11.70 ± 3.24	5–20
Mother autonomy	14.22 ± 3.39	5–20
Father care	29.34 ± 7.64	10–40
Father control	11.16 ± 3.40	5–20
Father autonomy	13.89 ± 3.69	5–20
Extra-familial system factor		
Peer pressure	21.02 ± 3.64	9–36

Table 3 Sexual risk behaviour among Malaysian youths ($n=84$)

Variables		Mean score ± SD	Frequency (%) $n=1171$
Sexual risk behavior (SRB)		0.07 ± 0.26	
SRB			84 (7.2)
Non-SRB			1087 (92.8)
No	Item		Frequency (%) $n=84$
1	Have you ever had sexual intercourse?	–	
	Yes		84 (7.2)
	No		1087 (92.8)
2	How old were you at the time you first had sex?	–	
	>16 years old		76 (90.5)
	<16 years old		8 (9.5%)
3	During your life, with how many people have you had sexual intercourse?	–	
	1 partner		54 (64.3)
	>1 partner		30 (35.7)
4	When you had sex, did you or your partner use any protection, e.g., condom, diaphragm etc.?	–	
	Yes		60 (71.4)
	No		24 (28.6)
5	Have you ever had sex with high-risk sexual partners?	–	
	No		73 (86.9)
	Yes		11 (13.1)

Table 4 Factors associated with SRB using simple and multiple logistic regression

Variable	Crude OR (95% CI)	*p* value	AOR (95% CI)	*p* value*
Age				
18–20 years old				
21–24 years old	2.03 (1.30–3.18)	0.002*	1.88 (1.14–3.12)	0.014*
Smoking history				
No				
Yes	8.07 (5.07–12.84)	<0.001*	5.91 (3.49–10.01)	<0.001*
Alcohol intake				
No				
Yes	5.51 (3.48–8.71)	<0.001*	1.93 (1.10–3.40)	0.022*
Illicit drug user				
No				
Yes	32.85 (8.33–129.54)	<0.001*	5.09 (0.90–28.78)	0.066
Non-organized religious activity (NORA)	0.66 (0.58–0.74)	<0.001*	0.72 (0.63–0.84)	<0.001*
Father care	0.94 (0.91–0.96)	<0.001*	0.96 (0.93–0.99)	0.006*
Peer pressure	1.10 (1.05–1.16)	<0.001*	1.10 (1.04–1.17)	0.002*

All assumptions were met. No extreme outliers. No multicollinearity

Model Goodness of Fit was checked with Omnibus Tests of Model Coefficients

Crude OR crude odd ratio, *AOR* adjusted odds ratio, *CI* confidence interval, *df* degree of freedom

* $p < 0.05$ significant association

with smoking history (AOR: 5.91; 95% CI: 3.49–10.01, $p < 0.001$) and alcohol consumption (AOR: 1.93; 95% CI: 1.10–3.40, $p = 0.022$) were 5.91 and 1.93 more likely to engage in SRB than those who did not. Students with higher peer pressure were more likely to engage in SRB (AOR: 1.10; 95% CI: 1.04–1.17, $p = 0.002$). Of the religiosity domains, non-organized religious activity (NORA) was the only variable significantly associated with SRB, in which those who engaged in NORA is inversely associated with SRB (AOR: 0.72; 95% CI: 0.063–0.84, $p < 0.001$). Furthermore, those with higher score in the father care domain was also found to be less engaged in SRB (AOR: 0.96; 95% CI: 0.93–0.99, $p = 0.006$). However, there was no association between illicit drug user and sexual risk behaviour reported in this study.

4 Discussions

4.1 Sexual risk behaviour

This study showed that the prevalence of SRB among university students was 7.2%, which is lower than the prevalence obtained from other local studies. Out of this proportion, 9.5% of them had their sexual debut earliest prior the age of 16. A study done among university students in Malaysian region, reported higher prevalence of SRB of 20% [6], whereas another study among adolescents from welfare institutions in Peninsular Malaysia showed 62.3% [16]. This inconsistent result with this study would probably due to the difference of the study population.

One third (35.7%) of the respondents admitted to have multiple sexual partners. This amount was higher compared to previous studies. A larger study involving nine Asian countries reported 2.5% of university students have at least two sexual partners in the past 1 year and apparently Malaysia only reported as 1.7% [3]. Although using similar population, the study questionnaire only focused on sexual behaviour for the past year, whereas for our present study, respondents were asked within their lifetime. Comparing younger groups, Cambodia showed similar result to this present study, where 34.6% of adolescents (14–20-year-old) had multiple sexual partners within 3 months [3]; while Malaysia reported lesser secondary schoolers (13–17-year-old) to have had multiple sexual partners (21%) [6]. However, sensitive questions could have been a barrier during data collection as this was collected at school, where honesty could be questioned.

More than two thirds (71.4%) of students engaged with SRB reported of protected sex. This amount is significantly higher compared to the NHMS 2017 reporting only 12.7% practicing safe sex [6]. This could be due to better knowledge on the importance of safe sex among university students compared to secondary schoolers. In another similar population

study, it was reported almost half of males and 40% females had protected sex [3]. In a local study, 59% did not use condom during their last sexual encounter [5]. The higher safe sex practice reported in this current study may be due to the higher awareness among the higher education institution students, which is one of the efforts made by the institutions.

4.2 Age

On average, the respondents' age was 20.16 ± 1.66 years. Most of the respondents' ages ranged between 18 and 20 years old (60.3%). In this study, it was observed that the older age group (2–24-year-old) had a higher tendency to engage with SRB than the younger group (18–20-year-old). This finding was like previous studies that also found older age groups were significantly associated with SRB [3, 20, 21]. This could be because the older age group tends to have higher sexual desire and function compared to their counterparts. This study also found that majority of the participants in the older age group reported to practice protected sex, which is possibly due to having more awareness on the prevention of STDs and unwanted pregnancies. However, in the local setting, many studies did not show significant association between age and SRB [5, 16, 19, 22], and this inconsistent result is probably due to different respondent coverage.

4.3 Smoking and alcohol

In this study, cigarette smoking is associated with high-risk sexual behaviour. Similar findings were reported in studies among adolescents across Asia [23, 24]. Multiple evidence revealed the adverse effects of smoking on sexual reproductive health, such as erectile dysfunction and reduced sexual arousal. Contrary to this study, a randomized control trial done among smoker-naïve women showed that nicotine significantly reduces the genital and physiological responses to sexual arousal [25]. From the above findings, the behavioural component of an adolescent plays a more prominent role compared to the physiological effects of nicotine per se on sexual behaviour.

Besides smoking, alcohol consumption was also associated with high-risk sexual behaviour in this study. Generally, it is widely known that alcohol usage is linked to high-risk sexual behaviour, such as unprotected sexual intercourse with a casual partner. Even though alcohol binging may lead to reduced libido, this seems otherwise among the adolescents. Nonetheless, long-term usage of alcohol is detrimental to sexual health, like smoking.

The relationship between smoking cigarettes, alcohol consumption factors, and risky sexual behaviour is complex, especially in adolescents, where multiple factors must be considered. Adolescent behaviour is influenced by external stimuli such as peers, social pressures, or mass media to gain validation and honour. The theory of risk-taking behaviour developed by Jessor et al. explained that risk-taking behaviour signifies the achievement of freedom attainment by an adolescent [26].

4.4 Father care

In this study, paternal care was found to be protective of SRB, where maternal care did not. This signifies the importance of a father's role in SRB of an adolescent. These results were also backed up by other literature reviews revealing that paternal attachment and disapproval, was associated with lower sexual behaviour and delayed sexual debut by a year older [27]. Paternal strictness of monitoring was evaluated to have no effects of the adolescent sexual behaviour [28], and the findings are similar to our study.

The effects of the opposite gender were also apparent in few studies. The care of a biological father and teenage daughter were correlated with positive sexual behaviour [29], whilst a study done among African American young men reported of sexual communication was more frequently engaged with mothers rather than their father [30].

Traditionally, raising children was mainly perceived as a responsibility of mothers. In recent years, more evidence evaluated the role of a father in children's development. However scanty evidence is available on paternal role for the sexual behaviour as the current evidence relied on cross sectional studies only and the sample were heterogenous.

4.5 Non-organised religious activity (NORA)

The participants in this study showed high intrinsic religiosity and moderate organised and NORA scores. However, only NORA was found to be a significant predictor of the SRB. Engagement in NORA for at least 2 or more times per week was found to be a protective factor for SRB. Similar results were found previously which showed different pattern of association between NORA and every risk behaviour, including sexual behaviour [31, 32]. In terms of gender, engagement in

organized or non-organized religious activities was helpful at preventing female students from having sexual engagement [33]. Religiosity has been postulated to reduce adolescents' sexual engagement through means of social control and social support, which could act at the different levels surrounding the adolescents' development. Being faithful to religion would make one to become more sensitive to the morality matters and more concern about the acceptable behaviour norms.

4.6 Peer

Another discovered major predictor of SRB was peer pressure. Similar results were found among Malaysian youths [34]. It is common knowledge that teenagers are affected by their peers' sexual practices and that close friends' sexual conduct has a significant impact on adolescents' perceptions. According to studies, adolescents' perceptions of their peers' sexual conduct and their own sexual experiences are positively correlated. This can be due to people in sexual relationships selecting friends who share their beliefs and values, or it might be because of peer pressure or friend motivation. Furthermore, peer discussion of sexual and reproductive issues has been connected to having sexual relationships [35].

5 Strengths and limitations

This study was the first nationwide study on SRB that targeted Malaysian university students (young adult) where probability sampling was applied. Hence, generalisability of the study may represent the Malaysian youth population, which provides strength to the study.

This study was conducted during the movement control order; thus, the data collection was changed to online medium. Communication between researchers and respondents for any questionnaire clarification is also limited with online surveys. Another limitation of this study was it adopted cross-sectional design which limits the ability to establish causal relationships.

6 Recommendations

From this study findings, targeted interventions are needed to reduce SRB among students. Sexual education programs should be organized to reinforce the students to practice safe sex, especially among younger students. Campaign on smoking and alcohol prevention and sexual health education, as these factors are found to be associated with SRB. Hence, institutional counsellors and public health practitioners, including psychiatrists and psychologists, are very much encouraged in fostering this intervention strategies.

Non-organized religious activities (NORA) should also be considered in intervention programs as it showed to be a protective factor against SRB. Additionally, promoting good sexual behaviours in mentorship programs in universities may also serve as protective factor since peer influence was also responsible for sexual risk behaviors among university students.

7 Conclusion

The prevalence of sexual risk behaviour among the university students was 7.2%. Age, smoking or vaping history, alcohol use, NORA, father care and peer pressure were found to be significantly associated with SRB. These factors should be explored further and made relevant into the strategies on prevention of SRB. Strategies should also be made parallel to the needs of the local youths as this generation represents the future of our country.

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Author contributions FM, KNK, NAS, SNSM, SMA, RD, IZI, HKS and NHS involved in the development of conception and design of the study. SMA collected the data. FM, KNK, NAS, SNSM, SMA and HKS involves in analysis and interpretation of the data. FM, KNK, NAS, SNSM and SMA drafting of the article and made revision of the article. FM obtained the funding.

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Data availability All data generated or analysed during this study are included in this published article.

Declarations

Ethics approval and consent to participate This study was approved and adhered to the ethical guidelines outlined by Medical Research and Ethic Committee for Research Involving Human Subject Universiti Putra Malaysia (JKEUPM-2021-141). This guideline is also guided in accordance with the Declaration of Helsinki (2008). Informed consent was obtained from all individual participants included in the study. The participants had the option to decline or withdraw from participation if they wish to do so at any point of the study.

Consent for publication Not applicable.

Competing interests The authors declare no competing interests.

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