

Sexual harassment in public transportation among female student in Kathmandu valley

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Purpose: Sexual harassment has been recognized as a serious problem in the world. It reduces the dignity of human rights. Therefore, this study aims to identify the prevalence of sexual harassment in public transportation and its consequences on female students in the Kathmandu valley of Nepal.

Methods: A structured questionnaire was applied for collecting the data from five health science locations in the Kathmandu Valley. Univariate and multivariate logistic regression models were used to identify the association with sexual harassment and its determinants.

Results: The female student who lived far away from campus (adjusted odds ratio [AOR] =9.02, 95% confidence interval [CI] =0.56, 14.03) and lived alone (AOR =10.44, 95% CI =2.83, 38.46) had more chance to be harassed. However, those students who traveled sometimes (AOR =0.01, 95% CI =0, 0.03) had a lower chance to face sexual harassment in public transportation.

Conclusion: Sexual harassment in public transportation was found to be significantly higher in female students who live alone and who travel more frequently in the evening. In addition, the study concluded that public vehicles are strongly associated with sexual harassment among female students in the Kathmandu Valley.

Keywords: sexual harassment, logistic regression, Kathmandu valley

Introduction

Sexual harassment is an action within men and women, which is related to unwelcome behavior on sex.^{1,2} It is characterized by a wide range of offensive manners including teasing, staring, winking, groping, pinching, sexual comments, telling jokes of a sexual nature, spreading sexual rumors, displaying porn videos, drawing pictures of a sexual nature, and squeezing or touching the private organs of women.³⁻⁵ Thus, these inappropriate behaviors toward women may violate their fundamental rights and dignity which is associated with mild to severe health consequences.⁶ Psychological (anxiety, decrease in self-esteem, sleep disorder, depression, etc.), economical, and social consequences are the result of sexual harassment of women.⁷ In this regard, women who were sexually harassed often ruminate about their past experiences which causes them to reflect on negative thoughts, self-harm, and low self-esteem, which amplifies loneliness, hopelessness, and helplessness, and develops symptoms of depression.^{8,9} In addition, victims, while using public transportation, tend to have a fear of getting sexually harassed, and this has caused women to modify their travel routes or restrict their use of public transport at all.^{10,11} This leads to the reduction of their capability to participate in professional as well as educational activities and also in public life.¹² Thus, it has been identified as one of the most damaging and ubiquitous barriers to career success and satisfaction for women.⁷ This act is more frequently committed by men.³

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Women from both developed and developing countries have stopped following their traditional roles and are involved in education, jobs, and public life.¹³ Different studies have concluded that sexual harassment against women is a global problem, which exists in schools, colleges, sports, workplaces, public transport, shopping malls, and restaurants.^{1,14} However, it was profoundly found in an educational setting, more than 80 percent were harassed at schools while approximately 40–85 percent of female students at colleges have experienced sexual harassment.^{15–17} Moreover, 85 percent of working women and 82 percent of students were harassed in public transport during 2014.¹² Nowadays, the use of public transport has become common among women mainly for the purpose of education and work.¹³ But research has also shown that concerns about safety have negatively affected the travel decisions of women.¹⁰

In Kathmandu, most of the public transport users are students and women with low income who cannot afford their own vehicles, so they choose the public transportation because it is the cheapest form of transport for their daily purposes.¹⁸ However, an increasing population has increased demands including the transportation system.¹⁹ Thus, there has been a rapid increase of public transportation in the Kathmandu valley over the last three decades.¹⁹ It was found that around 53,704 public transportation vehicles were used in 1998, while in 2018, the number of public vehicles increased by tenfold (570,143) including buses, micro and mini buses, tempos and taxis, and motorbikes.²⁰ While using public transportation, both men and women faced personal insecurity and sexual harassment. Subsequently, it was found that 80% of girls and women from the ages of 12–35 years have faced different forms of sexual harassment in public transportation.¹⁹ Despite the high rate of harassment, it remains as a silent issue in society due to the social, cultural, and even political factors.²¹ In spite of political advances, women are still expected to perform roles determined by traditional, cultural, and religious values.²⁰ These values make them stop from reporting to concerned authorities. Therefore, the harasser gets an opportunity in public transportation to harass girls/women.⁴ Women of all ages experience sexual harassment on public transport but students are more vulnerable.²² Studies have also shown that students and women remained silent or ignored the harassment because reacting or speaking against the harassment would lead to further violence or harassment.^{21,22}

Based on these observations, the estimation of prevalence and consequences of sexual harassment among female

students in public transportation in the Kathmandu valley can help develop a strategy for understanding the terms and the consequences of harassment. This is because, in Nepal, over the past year, sexual harassment of students particularly on girls and women has been increasing significantly, especially in public areas including transportation, and this has led to the restriction of movement for their education, employment, and other daily life purposes. The scenario is more severe in public transportation where millions of women are being victimized in their everyday life. Hence, gaining knowledge of sexual harassment can be beneficial in improving health policy, and thus improving the standard of survival and assuring the right of women to travel safely on all public transportation. Additionally, it will facilitate the development of a healthy police force regarding violence against women and harassment in Nepal. Less is known about how many female medical students are harassed in their daily life. In fact, health care providers are at greater risk of harassment, with 80% of serious violence being reported in health care setting.²³ In addition, health science students are struggling for their best; despite this, they were perpetrated by male students and others (faculty, peers).¹⁷ Therefore, this study aims at examining the prevalence and consequences of sexual harassment on public transport among female students in the Kathmandu valley. Meanwhile, it will also be beneficial in measuring the association between socio-economic status and sexual harassment as well as determining the effect of sexual harassment on female students.

Methods and materials

This study was undertaken in five out of nine health science campuses in the Kathmandu valley from mid-June to the end of August, 2018. The study focuses only on the female (both married and unmarried) students from Public health and Nursing students. The unit of analysis is female health science students. Students were asked to volunteer for a survey, and before they were recruited, written informed consent was obtained with explaining the goals and potential issues of their participation in this type of assessment. However, in this study, there were some participants at the age of 17 years. According to the law of Nepal, a citizen who has completed the age of 16 years can obtain the certificate of citizenship. Afterward, they are eligible for giving the consent and other sort of application for their legal activities. Thus, in this study, any participant under the age of 18 years was not required to obtain parental written informed consent. In such case, participants were able to consent on their own behalf.

Afterwards, the data collection was done using the structured questionnaire that included questions on background characteristics (age, marital status, religion, residency), living status (living with family/relatives and friends, and living single), father's occupation (farmer, officer, and seller), mother's occupation (housewife, officer, seller), father's education (less than or equal to primary school, and more than primary school), mother's education (less than or equal to primary school, and more than primary school), frequency of travelling (daily, sometime), type of harassment (verbal, non-verbal, and physical), effect of harassment (physical, and psychological), place (Bus, Micro, Tempo), time of harassment (morning, afternoon, and evening), harassment by (male co-passenger, passenger, conductor). Moreover, these variables of study were the questionnaire by adopting to modify the relevant literature of survey tools,²⁴ whereas, the design and format of the questionnaire is close-ended. The questionnaire was in the English language, because the respondents are taught their course in the English medium.²⁵ Then the questionnaire was provided to the students in three classrooms of each health sciences campuses. A lottery method was applied for selecting these campuses of the Kathmandu valley. For the self-administrative questionnaire, 56 students were taken from each campus which was done by using the simple random sampling technique then divided into three sub-groups comprising 18, 19, and 19 students. However, for this survey, the tool was pre-tested before administration. Calculating the sample size based on the previous prevalence (p) 97%.⁴ In such a situation, we are not using the previous prevalence. Because, if we take $p > 90\%$, then we will not be able to cover adequate cases for the sample size.²⁶ Therefore, to handle this issue, a pilot study was conducted to determine the prevalence of sexual harassment. In the pilot study, we used 10% of sample from the survey population and estimated the prevalence (77%). However, in this study the sample was based on finite population, sampling frame of the study was ($N=700$) from five health science campus, and allowable error (4%). This technique of estimating the sample size was driven from the work by Arya et al²⁶ Based on this prevalence, we determine the estimated sample size for this survey. With respect to this, we collected the ($n=280$) sample. However, only female students of a bachelor level were included in this study and those who were not interested were excluded. Approval was taken from Nepal Health Research Council (NHRC) for the ethical clearance.

The completed data collection forms were re-checked regularly to ensure that the forms were properly filled. A

software package consisting of a spreadsheet for data entry and then R program was used to analyze the data.²⁷ Also, data coding and data entry were done. The data were entered using a double entry approach for better accuracy. A number of quality check mechanisms such as range checks, logical checks, and skip instructions were used which helped to detect the errors during the data entry stage. The numbers were coded in each questionnaire. These numbers, however, were not corresponding to the study participants' names, contact information, or addresses. All entered data were kept secure in password-protected computers. Afterward, descriptive statistics were used to describe the characteristics of participants, their experience of sexual harassment while using the public transportation, and the effects of the harassment. Logistic regression analysis was performed to examine the effects of determinants of sexual harassment. Initially, explanatory determinants were included in the model, one at a time, to examine their univariate relationship with the outcome. Multivariate logistic regressions were used to identify the most important determinants of each outcome. A P -value of <0.05 was used to define statistical significance. Adjusted odds ratios (AORs) as well as their 95% confidence intervals (95% CIs) were used to depict the independent relationship between predictors and dependent variables.

Results

From the five health science campuses of the Kathmandu valley, about 280 female students were recruited for this study. Of these, the majority (82%) of respondents have used public transportation. Out of 280 students, 219 were harassed while using public transportation. After estimating the sexual harassment in public transportation from five different health sciences campus and plotting in [Figure 1](#) reflecting the harassment, its type, effect, and marital status, it described the highest pattern of harassment was found in unmarried female students, with sharing the large psychological effect on female students. Subsequently, non-verbal harassment followed by physical harassment more common among the female students.

[Table 1](#) shows the background characteristics of sexual harassment by marital status, age, caste, religion, and type harassment among female students while using public transportation. It was found that 78.21% of female students have faced sexual harassment. This prevalence was found higher in unmarried (53.88%) female students while 46.11% in married students. In the unmarried category, the majority (42.37%) of students were facing physical

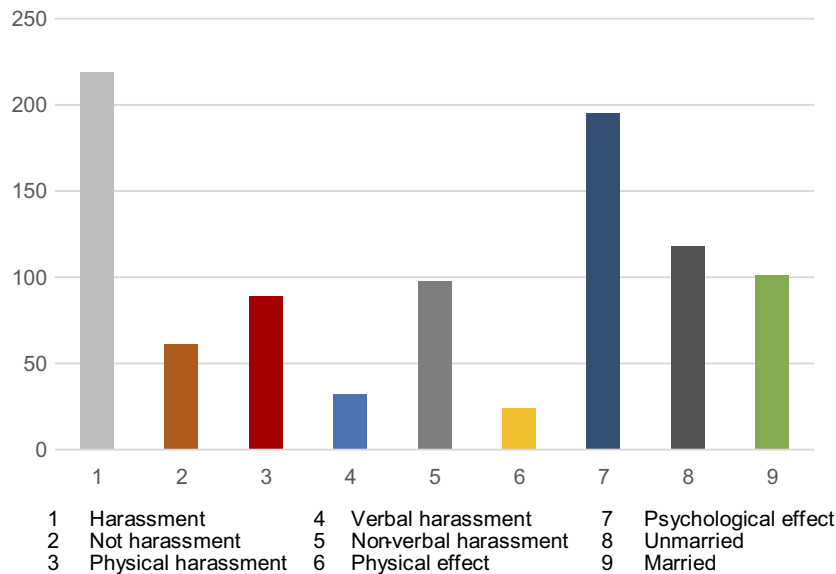


Figure 1 Sexual harassment, types, psychological effects, and marital status.

harassment, followed by verbal (14.40%) and non-verbal (43.22%) harassment. While 46.53% of student faced non-verbal harassment, physical harassment was 38.61%. Moreover, harassment was predominantly (66.07%) found at the age of 20–23 years. Regarding the ethnicity and religious background, 62.1% of Bhramin/Chetri and 86.4% of Hindu female students were harassed while using public transportation. Sexual harassment cases were highest for females in the last 12 months; 85.38% of students were faced with some form of sexual harassment while using public transportation.

Table 2 shows the distribution of harassment by person, place, time, living with, travel frequency, and effects of harassment among female students in the Kathmandu valley. In Table 2, it was revealed that those students who live alone (84.93%) and travel daily (96.8%) found a higher chance of facing harassment in public transportation. Respectively, it was found that most of the harassment was found on a bus (89.44%) while few incidents happened in a tempo (2.28%). Nonetheless, harassment was performed by the passenger (48.85%) and it was followed by the co-male passenger (45.66%). Because of the harassment, the majority of the students developed psychological (89.04%) effects, while some developed physical (10.95%) effects. The harassment was more common in the morning (40.63%) and evening (44.74%) shifts of vehicle.

Table 3 shows Factors associated with sexual harassment among female student in Kathmandu valley for core determinants. It was found that marital status was significantly

associated with harassment in public transportation in univariate ($P<0.05$) and multivariate analyses. Additionally, residency was found to be highly significant for sexual harassment. Female students who were living far away (more than four kilometers) had a greater chance of being harassed in public transportation (AOR =9.02, 95% CI =0.56, 14.03) compared with those living nearby (less than 4 kilometers). Furthermore, more students were harassed who lived alone (AOR =10.44, 95% CI =2.83, 38.46) than those who lived with their family or friends. As for the time of traveling, those who were traveling in the afternoon (AOR =0.12, 95% CI =0.03, 0.52) had a lower chance of harassment in public transportation as compared with morning and evening. Moreover, it was found that there was a highly statistically significant association between harassment and traveling time. The students who traveled in the evening had a higher rate of harassment (AOR =1.81, 95% CI =0.29, 11.24) compared with those who traveled in the morning or afternoon. Furthermore, it was found that traveling frequency was more likely associated with harassment. Those who occasionally used public transportation had a lower chance of being harassed (AOR =0.01, 95% CI =0, 0.03) compared with those who traveled on a daily basis.

Discussion

Public transportation is the main transportation service in Nepal. The majority of people prefer to use a public vehicle for their formal and informal work. Public transportation operates on fixed routes and provides efficient and affordable mobility, and access to work, education, social engagements, and recreation activities. However, a major concern about

Table 1 Background characteristics, age, marital status, religions, caste, mode of transportation, type of harassment among female students

Characteristics	Number (n=280)	Percent (%)
Age		
17–19 years	69	24.64
20–23 years	185	66.07
24–27 years	26	9.28
Caste		
Bhramin/Chettri	174	62.1
Janajati	101	36.1
Others (Dalit, Muslim, Madeshi, Puri)	5	1.8
Religion		
Hindu	242	86.4
Buddha	27	9.6
Others (Kirat, Muslim)	11	4
Harassment		
Yes	219	78.21
No	61	21.78
Harassment by marital status (219)		
Unmarried	118	53.88
Married	101	46.11
Type of harassment on unmarried women (n=118)		
Physical	50	42.37
Verbal	17	14.40
Non-verbal	51	43.22
Type of harassment on married women (n=101)		
Physical	39	38.61
Verbal	15	14.85
Non-verbal	47	46.53
Public transportation		
Used	229	82
Not used	51	18
Harassment by last 12 month		
Yes	187	85.38
No	32	14.61

public transportation is the lack of strong regulations and the poor quality of services in Nepal.²⁸ In Kathmandu, work and education are the main reasons for using public transportation; at least one third (83%) of females use it to travel in public.²⁹ So, it is important to consider how these sexual harassment difficulties particularly affect female students and all women as

Table 2 Distribution of harassment by person, place, time, living with, travel frequency, and effects of harassment among female students in Kathmandu valley

Characteristics	Number (n=219)	Percent (%)
Traveling frequency		
Daily	212	96.8
Sometimes	7	3.2
Travel by		
Bus	195	89.44
Micro-bus	19	8.71
Tempo	5	2.28
Time of travel		
Morning	89	40.63
Afternoon	32	14.61
Evening	98	44.74
Harassed by		
Passenger	107	48.85
Co-male passenger (same seat)	100	45.66
Conductor	12	5.47
Living with		
With family	33	15.06
Single/alone	186	84.93
Effect of harassment		
Physical	24	10.95
Psychological	195	89.04

well. Therefore, this study aims to identify the prevalence and association between sexual harassment and its determinants by using the multiple logistic regression models. The study revealed that 78% of females have been harassed while using public transportation. This high percentage of harassment was found in the age group 20–23 years. These findings of the study possibly indicate that there may be a high chance of dropping out from the campus due to the insecurity felt by students, and it may also lead to serious health consequences. Therefore, these findings help to provide information about insecurity and thus could encourage authorities to make the appropriate rules, regulations, and policies for special programs to block or reduce the harassment, such as having reserved seats for women. Nonetheless, the interim constitution granted to women to take the involvement in parliament, and any kind of activities by 33%. Hence, at least three priority seats for women and girls should be reserved in public transportation.³⁰ Also, campaigns to address sexual harassment in public places

Table 3 Factors associated with sexual harassment and its determinates among female student in Kathmandu valley

Variable	Univariate (95% CI)	P-value	Multivariate (95% CI)	P-value
Marital Status				
Married	I	<0.001	I	<0.001
Unmarried	1.84 (1.01, 3.33)		2.88 (0.78, 10.65)	
Residency				
Not far from campus (>4 km)	I	<0.001	I	<0.001
Far from campus (<4 km)	7.54 (1.77, 12.05)		9.02 (0.56, 14.03)	
Living with				
With family or friends	I	<0.001	I	<0.001
Single	14.45 (7.45, 28.05)		10.44 (2.83, 38.46)	
Time of travelling				
Morning	I	<0.001	I	<0.001
Afternoon	0.05 (0.02, 0.12)		0.12 (0.03, 0.52)	
Evening	1.59 (0.49, 5.2)		1.81 (0.29, 11.24)	
Frequency of travel				
Daily	I	<0.001	I	<0.001
Sometime	0.01 (0, 0.02)		0.01 (0, 0.03)	

have been sporadic and largely ineffective. There is a need for coordination and unified messages using common rather than development academic language.^{21,30} Meanwhile, a male-dominated society and low empowerment of women were contributing factors to harassment in public spaces including public transportation.

In this study, sexual harassment was found to be the highest on a bus, compared with a micro-bus or tempo. It is reasonable to assume that a bus has more space, comfortable seats, and the lowest fares. Due to these qualities of a bus, more people are choosing it for travel, which leads to overloading of passengers, lack of space and information, and delay of services, which has a disproportionately higher impact on females. These findings indicate the strategic programs on harassment in public transportation for controlling the negative impacts on females. Thus, to address incidents of harassment, the government should pay more attention and create policies, operations, and enforcement to help control the harassment in public vehicles. These findings are also well documented in other literature, showing that there are persistent inequalities in the access to public transportation in both rural and urban settings.^{31,32} So, every day millions of women are harassed in public transportation.²⁹ More than half of the respondents were harassed in buses, which is supported

by the study conducted in Lucknow, India. The maximum number of harassments took place in buses. Furthermore, overcrowding and insufficient seats for passengers provide a suitable environment for harassers to harass women.²¹ Morning and evening hours were the most risky times. It was found that harassment was more common in the evening (41.39%) followed by morning (40.46%). It is possibly due to the peak hours, and on an overcrowded bus the perpetrator (passenger) has ample opportunity to harass. Additionally, there might be limited number of vehicles during that time, which are at the higher risk of sexual violence. This finding was also mentioned in other studies and states that mornings and evenings are more unsafe times for a female in which she may face violence and sexual harassment in a bus. The reason behind this is that most of the males consider that they are superior socially, culturally, and physically, while females have less power compared with men. So, females feel insecure when they raise their voice against harassment.^{12,33}

Sexual harassment was found to be greater in unmarried (54.88%) females rather than in married (45.11%) women. Similarly, married women were less likely to face sexual harassment than unmarried. So it is reasonable to assume that the unmarried females have low physical power, low social capital, and a low level of knowledge

about sexual harassment. This finding was similar to the earlier studies conducted in various countries in which advanced age was a significant low-risk factor for harassment.^{34–36} Subsequently, those females who are married tend to be less likely to be sexually harassed in all places including their workplace, public space, and public transportation.³⁷ Furthermore, physical contact and touching was commonly faced by unmarried (65.81%) females rather than married (44.32%) women. There have been studies conducted in different parts of the world that supported the above statement. The majority of respondents have an experience of unexpected touching of the breast, brushing of thighs and bottoms, pinching of the bottoms, and pinching of the hips.³⁸ All these forms of physical harassment are due to unstable governments and no proper implementation of laws. Anti-sexual harassment laws have been made for decreasing the harassment in public transportation and other places, but still most females continue to be victimized by the harasser. The same conditions were also demonstrated in other studies. It was found that 59 countries have no laws for women; almost 70% of women are not well protected in the Middle East and North Africa, half in East Asia and the Pacific, and one-third in Latin America and the Caribbean.³⁹ Thus, a significant strategy should be made to investigate the elimination of sexual harassment in public transportation.

Our study revealed that 89.76% of female students have developed negative psychological effects, and that such effects lead to their dissatisfaction with life, low productivity, and a high chance of withdrawal from education and work.^{40,41} Different studies have shown that sexual harassment victimization has a negative impact on both the physical and mental health of women.⁴² Also, it helps to develop the deleterious consequences of mental and physical health effects.^{7,43} Females who were sexually harassed on public transport tend to have suicidal thoughts, thoughts of self-harm, low self-esteem, and symptoms of depression.⁴⁴ Hence, the psychological effects of harassment can lead to damaging the female's career, blocking their success and satisfaction.

Furthermore, living alone was found to be a significant determinant of sexual harassment, whereas marital status shows mixed results. Married women have shown their visible identity; thus, it made the difference among the unmarried. These findings were supported by other studies, showing that the chance of being harassed is more common in the unmarried and those who live alone.^{36,45} These conditions act to increase the insecurity felt by females and lead to negative effects, including health and socioeconomic; therefore, to control this

issue, the appropriate prevention strategy should be developed, including educating the students, providing guidelines about how to deal with complaints, and developing ways to be responsible for the victims. These should be implemented for preventing and controlling sexual harassment in a community and the nation.^{46,47} Additionally, it was found that the aforementioned strategy helps to protect females and give them the power to speak and fight against the perpetrator.⁴⁸ The majority of the students who live far from the campus areas have a lack of transportation options, so students from these areas are more likely to be harassed.⁴⁹ The frequency of traveling in a public vehicle is strongly associated with harassment. This finding is consistent with other literature, in which it was found for those individuals who were using a public vehicle five to six days a week.⁵⁰ Hence, this study indicated that sexual harassment is predominantly found among female students, and therefore, government should pay more attention to sexual harassment and provide support to females who speak up against it. So, there should be an urgent need for programs to address the harassment in public transportation among female students.

Conclusion

This study investigated the prevalence of sexual harassment and its determinants on public transportation among female students in the Kathmandu Valley. It was found that the sexual harassment was more common in unmarried females and those who live alone. Also, students who used the bus in the evening time have also found a higher chance to be harassed and to develop psychological effects. In addition, most of the harassment was done by a male passenger to a young female student age 20–23 years. The findings of the study indicate that interventions are needed at the national, regional, district, municipality, and rural-municipality levels for controlling the high burden of sexual harassment in Nepal.

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Author contributions

All authors contributed to data analysis, drafting and revising the article, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

Disclosure

The authors report no conflicts of interest in this work.

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