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Prevalence And Associated Factors of Open Defecation Among Secondary School Students of Kolhabi Municipality, Nepal

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Abstract

Background: Sanitation is fundamental to human development. Many international organizations use hygiene and sanitation facilities as a measure of progress in the fight against poverty, disease, and death. On September 30, 2019, Nepal was declared open defecation free (ODF), but still, It is seen that some rural parts of Nepal, along the Terai, where there are practices of open defecation. This study aims to assess the prevalence and associated factors of open defecation among secondary school students in Kolhabi Municipality.

Methods: A descriptive, cross-sectional study was conducted among 196 secondary school students of Kolhabi Municipality, Bara district. A semi-structured, self-administered questionnaire was used for data collection.

Result: Among 196 respondents, the prevalence of open defecation was 16.8%. Among the respondents who openly defecate, nearly half of the respondents (48.5%) gave reasons for open defecation as their peer does, followed by insanitary toilets (24.1%) and the continuation of an ancestor's way of life (21.2%). The prevalence of open defecation was higher among males (30.7%) than females (8.3%). The distance between the water source and toilet ($p = 0.018$) and the sex of the respondents ($p = 0.000$) showed significant associations with the prevalence of open defecation.

Conclusion: A study showed the high prevalence of open defecation, although Nepal was declared open defecation-free. So, the attitude of the students' needs to be changed. There should be a formulation and involvement of a committee at the ward level for awareness and sustainability of the program related to sanitation.

Keywords: Associated factors, Open Defecation, Prevalence, Secondary School Students

Introduction

According to the WHO and UNICEF Joint Monitoring Program, open defecation refers to the "practice of defecating in fields, forests, bushes, bodies of water, or other open spaces". Defecating in the open is an affront to dignity and a risk to children's nutrition and community health. The elimination of open

defecation is recognized as a top priority for improving the health, nutrition, and productivity of populations in developing countries and is explicitly mentioned in SDG target 6.2.

Open defecation rates have been decreasing steadily; from 2000 to 2020, the number of people practicing open defecation declined from 1,229 million to 494 million, an average decrease of 37 million people per year. All SDG regions saw a drop in the number of people practicing open defecation, except for Oceania, where open defecation increased from 1.1 to 1.8 million. In 2020, more than 5% of the population still practiced open defecation in 55 countries. Nine out of ten people who practiced open defecation lived in two regions: Central and Southern Asia (233 million) and Sub-Saharan Africa (197 million) [1]. Sanitation is fundamental to human development. Many international organizations use hygiene and sanitation facilities as a measure of progress in the fight against poverty, disease, and death. Access to proper sanitation is also considered a human right, not a privilege, for every man, woman, and child. Sanitation services refer to the management of excreta from the facilities used by individuals, through the emptying and transport of excreta for treatment and eventual discharge or reuse. Inadequate sanitation is a major cause of disease worldwide, and improving sanitation is known to have a significant beneficial impact on people's health. Improvements in sanitation can reduce diarrheal disease and significantly lessen the adverse health impacts of other disorders responsible for death and disease among millions of children. Diarrhoea and worm infections weaken children and make them more susceptible to malnutrition and opportunistic infections like pneumonia, measles, and malaria [2].

Nepal is a low-income country in South Asia with a population of 28 million, with 83% of the population residing in rural areas and one-fourth of the population living below the poverty line [3]. As per the 2016 Nepal Demographic Health Survey (NDHS), the under-five mortality and infant mortality rates are 39 and 32 deaths per 1,000 live births, respectively, with diarrhea as the major cause of childhood morbidity and mortality in Nepal [4, 5]. Government and non-government agencies have been making efforts to increase latrine coverage in Nepal since 1990, followed by CLTS in 2003 and SLTS in 2006. The latter approaches emphasize creating open defecation-free (ODF) communities in Nepal. The Nepali government emphasizes that an open defecation-free' area is an area with no feces exposed to the air. Thereby, an 'ODF' status is given to an area if there is no open defecation in the designated area at any given time, all households have access to improved sanitation facilities (toilets) with full use, operation, and maintenance, and all schools, institutions, or offices within the designated area have toilet facilities [6]. Beginning with the first ODF village in 2007, Kaski district became an ODF district in 2011, and the Nepal government aimed to make Nepal ODF by 2017 by implementing the Sanitation and Hygiene Master Plan 2011 [7, 8] and declared ODF in September 2019. Human feces can cause various kinds of communicable diseases, from viral and bacterial to protozoan. Hygienic and proper use of toilets is a step forward in managing those diseases. [10,11] The burden of these faeco-oral diseases is high in low- and middle-income countries (LMICs) like Nepal, where not having access to toilets is considered a major determinant of public health problems, including the risk of diarrhea and other water-borne diseases [9, 10].

Methods

A descriptive cross-sectional study was conducted among secondary students in Kolhabi municipality. The sample size was 196. It was calculated using the formula z2pq/d2, where the prevalence of 15%, 95% confidence interval, and 5% margin of error were taken. A pre-tested, self-administrated questionnaire was used as a technique for data collection. A proportionate sampling technique was used

in the study. Ethical approval was received from the IRC of the Manmohan Memorial Institute of Health Sciences, and the ethical aspect was considered. The data were entered and analyzed using IBM SPSS Statistics version 25.0. Based on the distribution and variance, appropriate statistical tests were used for analysis. Descriptive analysis was used to describe background characteristics and prevalence. A chi-square and Fisher's exact test were used to test the difference between the categorical variables, and $p < 0.05$ was considered statistically significant.

Result

A total of 196 secondary school students of Kolhabi municipality were studied to determine prevalence and associated factors of open defecation. The median age of the respondents was found to be 17 years. Nearly four fifth of the respondents (79.6%) were less than 17 years and remaining (20.40%) were more than equal to 17 years. Nearly two third of the respondents (61.7%) were female and remaining (38.3%) were male. Majority of the respondents (71.9%) were Janajati followed by Madhesi(11.7%), Brahmin/Chhetri (10.2%), Dalits (3.6) and remaining were of others caste (2.6%). Almost all of the respondents (96.5%) were Hindu followed by Islam (2.0%), Buddhist (1.0%) and Christianity (0.5%). Almost all of the respondents (98.5%) were unmarried and very few were married (1.5%). More than half of the respondents (55.6%) were from Nuclear family followed by Joint family (33.7%) and Extended family (10.7%).

Table 1: Socio-demographic characteristics of respondents

Characteristics	Frequency (n=196)	Percentage (%)
Age		
Median (17±2)		
<17	156	79.6
≥17	40	20.4
Sex		
Male	75	38.3
Female	121	61.7
Ethnicity		
Brahmin/Chhetri	20	10.2
Janajati	141	71.9
Madhesi	23	11.7
Dalit	7	3.6
Others	5	2.6
Religion		
Hindu	189	96.5
Buddhist	2	1.0
Islam	4	2.0
Christianity	1	0.5
Marital Status		
Married	3	1.5
Unmarried	193	98.5
Type of Family		
Nuclear	109	55.6

Joint Family	66	33.7
Extended	21	10.7

Nearly one third of the respondents (30.1%) were studying in Class 9 followed by Class 11 (29.6%), Class 10 (23.0%) and Class 12 (17.3%). Nearly one third of the respondents (31.1%) father had Basic level of education followed by secondary (28.6%), Literate (26.0%), Illiterate (12.8%) and University (1.5%). Majority (53.1%) of their mother was found Illiterate followed Literate (23.0%), Secondary (12.8%). More than half of the respondents (60.2%) father was in agriculture, followed by Business (15.8%). Nearly half of the respondents (46.9%) mother was in agriculture. Most of the respondents (81.6%) were living below the poverty line.

Table 2: Socio-economic characteristics of respondents

Characteristics	Frequency (n=196)	Percentage (%)
Level of Education		
Class 9	59	30.1
Class 10	45	23.0
Class 11	58	29.6
Class 12	34	17.3
Education Status of Father		
Illiterate	25	12.8
Literate	51	26.0
Basic	61	31.1
Secondary	56	28.6
University	3	1.5
Education Status of Mother		
Illiterate	104	53.1
Literate	45	23.0
Basic	21	10.7
Secondary	25	12.8
University		0.5
Occupation of Father		
Farmer	118	60.2
Businessman	31	15.8
Wage labor	2	1.0
House maker	5	2.6
Foreign Employment	11	5.6
Government Employment	7	3.6
Others	22	11.2
Occupation of Mother		
Farmer	92	46.9
Businessman	7	3.6
House maker	22	11.2

Government employment	5	2.6
Others	70	35.7
Family Income		
Above poverty lone	36	18.4
Below poverty line	160	81.6

The prevalence of open defecation among the respondents was found 16.8% [Table 3].

Table 3: Prevalence of open defecation

Characteristics	Frequency (n=196)	Percentage(%)
Site for defecation		
Open	33	16.8
Toilet	163	83.2

Among 33 respondents, nearly half of the respondents (48.5%) gave reasons for open defecation as their peer does, followed by Insanitary toilet (24.1%), Continuation of ancestor's way of life and others (21.2% and 6.1%) respectively. One third of the respondents (33.3%) had preferred the Fields regarding the place of choicefor open defecation followed by Bodies of water (30.3%), Bushes (27.3%) and Forest (9.1%) [Table 4]

Table 4: Reason and Place of choice for open defecation

Characteristics	Frequency (n=33)	Percentage(%)
Reasons for OD		
Peer does	16	48.5
Continuation of ancestor's way of life	7	21.2
Insanitary toilet	8	24.2
Others	2	6.1
Place of choice for OD		
Bushes	9	27.3
Fields	11	33.3
Forest	3	9.1
Bodies of water	10	30.3

Sex of the respondents showed significant association with prevalence of open defecation (p=0.000). The prevalence of open defecation was highamong Male (30.7%) than Female (8.3%). Different factors such as age, ethnicity, religion,marital status, type of family, family size were not significant associated with the prevalence of open defecation [Table 5].

Table 5: Association of prevalence of open defecation with socio-demographic variables

Factors	Prevalence of OD (n=196)		χ 2	P value
	Open n(%)	Toilet n(%)		
Age				
Median (17±2)				
<17	24(15.4)	132(84.6)	1.151	0.283
≥17	9(22.5)	31(77.5)		
Sex				
Male	23(30.7)	52(69.3)	16.595	**0.000**
Female	10(8.3)	111(91.7)		
Ethnicity				
Janajati	28(19.9)	113(80.1)	3.276	0.070
Non janajati	5(9.1)	50(90.9)		
Religion				
Hindu	33(17.5)	156(82.5)		0.604*
Others	0	7(100)		
Marital status				
Married	1(33.3)	2(66.7)		0.427*
Unmarried	32(16.6)	161(83.4)		
Type of Family				
Nuclear	18(16.5)	91(83.5)	0.018	0.892
Joint	15(17.2)	72(82.8)		
Family size				
Median (6±1)				
<6	11(12.9)	74(87.1)	1.627	0.202
≥6	22(19.8)	89(80.2)		

***Fisher's exact test**

The distance between water source and toilet of the respondents showed the significant association with the prevalence of open defecation (p=0.018). Other different factors such as average monthly family income, location of toilet, condition of toilet were not significant associated with prevalence of open defecation [Table 6].

Table 6: Association of prevalence of OD with others variables

Factors	Prevalence of OD (n=196)		χ 2	P value
	Open n(%)	Toilet n(%)		
Average monthly family income				
Below poverty Line	28(17.5)	132(82.5)	0.274	0.601

Above poverty Line	5(13.9)	31(86.1)		
Location of Toilet				
Inside house	9(16.4)	46(83.6)	3.000	0.392
Attached to the house	7(11.3)	55(88.7)		
<10 meters from the house	14(23.0)	47(77.0)		
≥10 meters from the house	3(16.7)	15(83.3)		
Condition of Toilet				
Sanitary	26(14.9)	148(85.1)		0.066*
Insanitary	7(31.8)	15(68.2)		
Distance between watersource and Toilet				
<10 meters	14(11.8)	105(88.2)	5.565	**0.018**
≥10 meters	19(24.7)	58(75.3)		

***Fisher's exact test**

Discussion

This study assessed the prevalence and associated factors of open defecation among the secondary school students of Kolhabi Municipality. In this study majority of the respondents are of age group less than 17 years and nearly two third of the respondents where female.

In spite of 100% coverage of toilet the respondents opted for open defecation (16.8%) in the study, which is compatible with the study conducted by Panda PS et all in Raipur district of India where 23.2% of the population opted for open air defecation in spite of presence of community latrine [11]. A study conducted by Adhikari R and Ghimire S (2019) who used NDHS survey 2016 for the study showed the prevalence of open defecation was 15% which is similar to this study, nearly half of the households (49%) did not have toiletfacility, where nearly a fifth belonged to Madhesh Province [9]. As per a study in 2017, the latrine coverage of Hattimudha is 75.9% with open defecation being practiced by 28.4% (24.1% who did not possess latrine at households and 4.3% of those who possessed latrine) [12]. A study conducted in Rural Etawah, Uttar Pradesh of India shows 54.0% practiced of open air defecation which is quite higher than this study [13].

Among the respondents who defecate openly, nearly half of them (48.5%) gave reasons as their peer does, so they do, followed by insanitary toilet (24.2%), continuation of ancestor'sway of life (21.2%) and others (6.1%). Concurring with this finding of our study, finding from Hattimudha village in Morang district of eastern Nepal show that people chose open defecation as a mode of socialization, an activity that gave a sense of autonomy, a habit and a convenient choice [7]. Furthermore, finding from India show that people who chose open defecation do so because they find open defecation to be more

convenient, enjoyable [14]. This study shows significant association between prevalence of open defecation and sex ofthe respondents (p=0.000) in which male defecate openly more than female, which might be due to the more exposure of the male to the outer environment, since this study also showed that among the open defecation respondents, they defecate openly due to their peer does. Similarly, the study conducted by Panda PS et all in Raipur district of India also shows significant association between prevalence of open defecation and sex in which prevalence of open defecation was more in male [11]. A study in India reports phenomena where men prefer to go out for defecation. Some women consider open defecation as a medium for socialization, while men associate going out for defecation with their masculinity and they prefer that the women, children and the sick to use the toilet at home [15, 16]. But a study by Bhatt et all shows vice-versa where a preference to men for usingtoilets at home while women were compelled to go outside. This clearly calls forresearchers and policymakers to consider that open defecation has more personal and cultural aspects to it, which needs serious considerations during sanitation campaigns [7].

This study also shows the significant association between open defecation and distance between water source and toilet in which open defecation practice was found more on therespondents whose distance of source of water and toilet amore than equal to 10 meters than that of less than 10 meters. Similarly, an analytical cross-sectional survey conducted in 251 villages of 493 respondents of Dharampuri district of Tamil Nadu in 2018at India, to assess the prevalence of open defecation among households with toilets and associated factors shows that Respondents with a water source ≥10 m from the toilet were strongly associated with the practice of open defecation. This finding was in agreement with the study conducted by Nvotny J et. al which shows that the unavailability of water facilities at toilets motivates people for open defecation anddisuse of toilets [17, 18].

Conclusion

The study showed high prevalence of open defecation among the respondents in spite of 100% coverage of toilet in their houses. The finding of this study suggested that declaration of ODF is useless until further interventional approaches are carried out. Health education program should be carried out to aware the people regarding the effects of open defecation. Local government should strongly emphasize on motivating the people for the use of toilets and water facility should also be made easily available for all household.

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Authors' Biography

Mrs. Rabina Khadka is a lecturer at the Manmohan Memorial Institute of Health Sciences (MMIHS), Kathmandu, Nepal. She has a good command of research areas. Mr. Karan Kumar Chaudhary was a student at MMIHS who recently graduated in public health. Mr. Amrit Bist is pursuing his master's degree in public health from the Patan Academy of Health Sciences, and Mr. Pankaj Kumar Singh is a public health graduate who works as a nutrition field officer in the Integrated Rural Development Society.

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