

Water, Sanitation and Hygiene in Nepal and International Travellers' Travel-Health Experiences

Ramesh Bhatta,¹ Kabita Aryal,² Pramila Thapa,¹ Kumari Damayanti Joshi,³ Chhavi Raj Bhatta⁴

¹Yeti Health Science Academy, Maharajgunj, Kathmandu, Nepal, ²Family Welfare Division, Department of Health Service, Kathmandu, Nepal, ³School of Education and Arts, Deakin University, Melbourne, Australia, ⁴School of Clinical Sciences at Monash Health, Monash University, Australia.

ABSTRACT

Background: Tourism is one of the main sectors in Nepal, contributing in its economic growth. It is influenced by various factors including the situation of water, sanitation and hygiene and water, sanitation and hygiene practices. For travelers, poor water, sanitation and hygiene provisions are considered risk factors for different food and water-borne diseases. This study aims to describe the perceptions of international travelers regarding their experiences on WASH facilities or practices, and how it influences their health, and travel experiences.

Methods: This is a cross-sectional pilot study conducted among 150 international travelers in Nepal. The travelers were selected conveniently from the Kathmandu valley. The data on different water, sanitation and hygiene related variables, travelers' health and travel experiences were collected using semi-structured questionnaire. The quantitative data was entered into SPSS for descriptive analysis and qualitative data was transcribed through thematic analysis.

Results: Of 150 international travelers, about 2/3rd of the travelers had inadequate perception of water, sanitation and hygiene condition. Nearly 23% of them experienced gastrointestinal symptoms, including diarrhea in the past week during their visit. Among those travelers who experienced gastrointestinal symptoms, 21.4% of them reported of their travel plans being affected.

Conclusions: Perception and experience with water, sanitation and hygiene facilities was found inadequate among international travelers visiting Nepal. Such facilities seem to have affected the travelers' health (nearly a quarter of them experienced gastrointestinal symptoms, including diarrhea) and their travel plan. Hence, this pilot study demonstrates that there is an urgent need to improve the water, sanitation and hygiene facilities in the travel and tourism sector of Nepal.

Keywords: Nepal; travelers and travel health; water, sanitation and hygiene

INTRODUCTION

Inadequate water, sanitation and hygiene (WASH) poses a major environmental health challenge in many low income countries, including Nepal. Globally, 2.3 billion people lack a basic sanitation service and 892 million people practice open defecation,¹ which leads to faecal contamination of surface and groundwater.² In Nepal 61% of the population have access to an improved water supply and 46% have access to improved sanitation facilities.^{1,3} Further, the availability and quality of public toilets is also poor and lack proper infrastructure.⁴ International travelers have also experienced the poor condition of public toilets and sanitation practices during their visit to Nepal.^{5,6} Inadequate WASH

provisions are considered risk factors for shigellosis, typhoid, hepatitis A, and diarrhea that are frequently reported amongst international travelers to developing nations.⁷⁻¹⁰ This study aims to describe the perception of WASH experiences amongst international travelers to Nepal, and assess its relationship with their travel experience and future travel plans.

METHODS

A cross-sectional pilot study was conducted among the international travelers in Nepal. An international traveler is defined as any traveler with the nationalities other than that of Nepal, who have stayed in Nepal

Correspondence: Ramesh Bhatta, Yeti Health Science Academy, Maharajgunj Kathmandu, Nepal. Email: rameshcare@yahoo.com, Phone: +9779841387750.

for at least for 7 days. A non-probability convenience sampling approach was used for selecting the research participants. The study recruited 150 international travelers (aged 18 years or older) who were in Nepal. Data were collected through structured as well as semi-structured questionnaires. The survey tool was designed based on the available literature.¹¹⁻¹⁴ The questionnaire was pre-tested and reviewed accordingly.

Research assistant and researcher himself collected anonymous data through approaching travelers by visiting local tourist destinations. Travelers were met in person randomly requesting them to consider taking part in the study. In addition, local travel and tour, and restaurant/hotel operators were contacted to get their permissions if their guests could be approached for the study. After completing the data collection, the available data were entered into SPSS. Frequencies and proportions were computed for descriptive results. Chi-square tests were performed to evaluate statistical differences among categorical data. For qualitative information, thematic analysis was done through the analysis of verbatim details and narrative details. During the data collection the interviews were recorded with the permission and note taking was done for recording of expressions. The records were listened repeatedly and transcribed during analysis.

A written informed consent form with an explanatory statement was provided to and collected from those who agreed to participate in the study. The ethical approval of the study was taken from the Ethical Review Board (ERB) of Nepal Health Research Council with ERB protocol number 65/2020P.

RESULTS

Of the 150 international travelers, 56.7% were females. The distribution of the participants' age was: 42% (20-30 years), 24% (31-40 years), 32% (40 plus years), and 2% (less than 20 years).

A majority of the participants were from Europe (60.7%), followed by Asia (18.7%), North America (9.3%), South America (6%), Australia (4.7%) and Africa (0.7%). The ethnicity consisted of white (75.3%), Asian (Indian subcontinent) (9.3%), Asian (Far-east) (8%), Hispanic/Latino (4%), Bi/Multi-racial (2%) and Middle-eastern (1.3%). Seventy four percent of them had completed university degree and 26% of them had secondary school education.

Travel reasons of the participants were: tourism/

vacation (80.7%), volunteer/missionary (10.7%), visiting friends/relatives (4.0%), business (2.7%), and educational/research (2%). The travelers' plan duration of stay was: > 4 weeks (25.3%), 3-4 weeks (36%), 1-2 weeks (34%), and < 1 week (4.7%). More than three fourth (76%) travelled with friend(s)/family, while the rest of them travelled alone. Sixty one percent of the travelers had stayed in Nepal for < 2 weeks, while 30.7% had stayed for 2-4 weeks, and 8% had stayed for more than 4 weeks. The venues of their stay were: hotel (46%), guest-house (42%), and at home stay/friend's home (8.7%).

Almost all (97.3%) of the travelers had no underlying health conditions. About 48% of the travelers had sought medical advice prior to the trip; 32% from their general practitioner/family medicine doctor and 16% from a specialized travel clinic. During the trip, the travelers had carried a number of medications: oral rehydration solution/product (40.6%), antibiotic (36%), antiemetic (28.6%), probiotic (23.3%), antimotility agent (22.6%), antiparasitic (5.3%) and other drugs such as contraceptives, pain killer, acetazolamide and bronchodilator is carried by 4% of the travelers.

While travelling in Nepal, a majority (78.7%) of travelers preferred mineral water for drinking, boiled water (16%), and water treated with chlorine/iodine (5.3%). About three fourth (72.7%) of the travelers had poor or inadequate perception of sanitation experience. Similarly, 67.3% of the travelers had poor or inadequate perception of hygiene experience in Nepal. Most (58%) of the travelers' have perceived that the sanitation condition was not acceptable and 18.7% of them have perceived that it was worst.

Of total research participants, 23% of them reported of experiencing diarrhea in the past week during Nepal visit. Of those reporting diarrhea, its severity was; 79.4% had mild or tolerable (79.4%), moderate or distressing (11.7%) and 8.8% had strong or incapacitating (8.8%).

Travelers who experienced gastro-intestinal (GI) health symptoms during the trip, 16.7% of them mentioned that the symptoms adversely affect their overall travel experiences. Nearly 21.4% of travelers reported that the GI-health symptoms that they experienced during the trip affected their travel plans, For example, 88% of them had to stop their planned activities and travelling. About 15% of the travelers reported that they would consider alteration in future travel plans due to their perceptions of WASH experience in Nepal. The alterations mentioned included consideration of better accommodation (78%),

avoiding going to countryside (9.3%), and other changes in itineraries (16.7%). A majority of them reported that public toilets were unhygienic and in bad condition, (i.e., unrepaired and stained), so it was uncomfortable and difficult to use. They also shared that the garbage was not properly managed and thrown haphazardly in/ around the roadside and river. Travelers also mentioned that they don't want to take the risk of travelling to the place with inadequate hygiene and WASH facilities.

Disregarding the WASH condition that the travelers have experienced, almost all the travelers appreciated the countries' natural beauty and other attractions. They (i.e. 57%) told that they enjoyed the natural beauty, like the friendly and positive nature of Nepalese peoples (49.6%), enjoyed the delicious Nepalese food (48.3%), loved to visit historical place observe different cultures (34.8%), enjoyed the birthplace of lord Buddha (22%) and trekking sites (10%).

DISCUSSION

Nepal is a well-regarded holiday destination among international travelers and ranked in the number one best value destination for 2017 and number five best value hot list destination for 2018.¹⁵ In 2018, 1.17 million international travelers visited Nepal.¹⁶ Poor WASH facilities at travelers destinations impacts on the health and aesthetic appeal of the natural environment and even impact and travelers arrivals and related services.¹¹ An assessment conducted on health and hygiene stander among 140 countries suggests that, in Nepal health and hygiene status is poor due to water quality and sanitation.⁶ This study aims to explore the perception and experiences of WASH amongst international travelers to Nepal, and assess its relationship with their future travel plans.

Previous report shows that travelers' choice of visit differs with traveler's age, sex, their company during travel and place of their origin.^{17,18} Our study shows that majority (42%) of the travelers were from age group 20-30 years, 56.7% were female, most of them (60.7%) of them were from European countries. However, government report shows that majority of travelers visiting Nepal were from age group 31-45 years, and majority (52.3%) were male.^{17,18} Similarly, in the year 2020, majority of the travelers visiting to Nepal were from India (21.2%), China (14.2%), USA (7.8%), UK (5.1%) and Srilanka (4.7%).¹⁸

Travelling alone, with friends and partners take more adventurous trip package them those who travel with

their family and children.¹⁷ In Nepal, government report shows that more than 65% of the travelers had visited to celebrate their holidays and for their personal pleasure, 16.5% visited for adventure, trekking and mountaineering, 14.3% to visit the religious places and 4.1% have other purposes.¹⁸ Our study also shows that 80.7% travelers visited Nepal with the purpose to enjoy their vacation followed by being involved as volunteer in missionary work, visiting friends and relatives, for business and least had purpose related with education and research. Our study also shows that, 36% of travelers had planned to stay for 3-4 weeks, in Nepal, and 34% had planned to stay for just 1-2 weeks. The length of stay is important for the tourism sector, more days the travelers spend in Nepal the tourism sector will be benefitted more. Government report shows that average length of stay in the year 2019 was 12.7 days.¹⁸

Our study shows that 2.7% of the travelers were facing health pre-existing problems during their travel. It is important for the travelers to get necessary details and health advice about the particular place when they are travelling for taking necessary precautions.¹⁹ The current study also shows that nearly half of the travelers had taken the medical advice from the general practioners or family medical doctors and from the specialized travel clinic. The WHO suggests travelers to seek necessary advice to prevent from the possible hazards that they can face during their travelling.¹⁹ This helps travelers to protect themselves from the risk of diseases and encourage them to carry necessary medication and items that may be necessary during their travel.¹⁹ Our study shows that about 41% of the travelers had carried oral rehydration solution and also other drugs such as antibiotics, anti-emetic, probiotic, antimotility drug and antiparasitic drugs during their travel.

Unsafe drinking water could be one of the main reasons behind having health problems among the travelers. While travelling in Nepal, our study shows that majority of the travelers (78.7%) preferred mineral water, which they think is safe to drink. The travelers should ensure that they are drinking safe water and avoid the untreated water to prevent from diarrheal diseases.²⁰ Diarrhea and other water borne diseases are common in Nepal due to the contamination of drinking water and poor quality of hygiene and sanitation.²¹ A report from US Embassy to Nepal has also highlighted that travelers in Nepal commonly suffer from diarrhea and gastro-intestinal problems especially during the summer season.²² Our study also shows that about 23% of travelers had experienced diarrhea, bloody stool,

nausea and vomiting, loss of appetite, and abdominal pain during their visit to Nepal. Those who experienced such GI-problems, 28.5% of them believe that the health problems that they faced were due to the contaminated water and poor hygiene. In Nepal, sanitation and hygiene is usually inadequate and hence unsafe drinking water, poor sanitation and hygiene has also remained as a major causal burden of diarrheal diseases.^{6, 21} Globally, unsafe and insufficient quantity of drinking water, inadequate sanitation, and unimproved hygiene account for 7% of the global burden of disease.²³

Our study shows that more than 2/3rd of the travelers perceived that the WASH facilities in Nepal were inadequate. Further, they expressed that poor quality of water and food hygiene could be the reason of their suffering. Those travelers who had diarrhea also complained that they had consumed the street food (28.6%), eaten unwashed fruits and vegetables (11.9%) and taken improperly cooked meat and fish. To prevent from such problems the travelers are advised to avoid buying food and beverages from the street, avoid eating raw and under cooked meat, and drink boiled or treated water or bottled carbonated beverages.²² The WHO suggest that the travelers should choose the facilities with good accommodation, hygiene and sanitation, medical care and water quality at the place where they are travelling, so that they will not suffer from health problems.¹⁹

Travelers' destinations are also affected by the availability, quality and hygiene of toilet facilities. Our study shows that 58% of the travelers have perceived the condition of toilet was not acceptable and 18.7% of them have perceived it was in a worse condition. This shows the need for the improvement of toilets in the tourist areas. Regarding the condition of toilets, they expressed that the toilets were uncomfortable and difficult to use since they were unrepaired and stained. Public toilets are really unsatisfactory in Nepal, study shows that one-fourth of the existing toilets facilities in Nepal are constructed with poor condition lacking proper infrastructure, cleanliness, adequate water and hand washing facilities.^{4,24} Status of public toilets in Kathmandu valley shows that there are only 65 public toilets, i. e. one public toilet serves 3000 peoples in an average, whereas the WHO stander suggests that there should be at least one toilet per 50 peoples and it should be in every five hundred meter distance.²⁵ Hence, it is urgent to improve the availability and quality of toilets and maintain it as per stander.

Travelers' travel plans tend to get disturbed if they

suffer from any health problems during their travel. Our study shows that 21.4% of the traveler's travel plan was affected due their gastrointestinal problems. Out of them, 89% told that they have to stop their planned activities and travelling, and 11% have to change their travel plan. The WHO data shows that globally 20-50% i. e., about 10 million of total travelers are affected with water borne infections, mainly diarrhea.²⁶

Unpleasant health related experiences and having negative impression toward the WASH discourage travelers to visit that particular destination. Regarding the impression of travelers on the waste disposal, majority of them complained that they dislike the improper management and haphazard disposal of garbage at the roadside and in the river.

Regardless of the experience that they had related with WASH, almost all the research participants told that they have enjoyed their stay at Nepal and also have planned to travel Nepal in future. Travelers choose to travel different destinations for experiencing new lifestyle, different traditions and also to explore the cultural diversities.²⁷ In Nepal they get chance to experience the cultural values and differences and also to understand the Nepalese peoples.^{27,28} Majority of the travelers expressed that they enjoyed the geographical diversity, natural beauty with beautiful mountains and lakes, good atmosphere, and warm welcome and good hospitality provided by Nepalese peoples. Almost all the travelers shared that they like the Nepalese culture, different historical places and the trekking sites.

Regarding the limitation, the study had originally planned to recruit 300 international travelers, however due to COVID-19 pandemic and subsequent lockdown, only 150 research participants were recruited. Therefore, the study is rather taken as a pilot study with a small sample of travelers. Therefore, the study results should not be generalized but can be used to generate hypotheses. Similarly, health symptoms reported by the participants are self-reported. Being this a cross-sectional pilot study, prevalence of health symptoms and perception and experience of WASH services may not have causal relationship. Therefore, the findings of the study should be interpreted cautiously.

CONCLUSIONS

Perception and experiences toward WASH facilities were found inadequate among international travelers visiting Nepal. The travelers reported of experiencing different GI symptoms including diarrhea, which subsequently

affected their travel plan. These results indicate that provision of WASH facilities in Nepalese travel and tourism sector is inadequate and needs due attention. Access to clean water and ensuring proper sanitation and hygiene facilities is one of the important aspects that should be considered for promoting the tourism industry in Nepal. Hence, it is urgent to improve the WASH facilities in the tourist sites.

ACKNOWLEDGEMENTS

The authors would like to thank Professor Karin Leder and Dr Sarah McGuinness for their invaluable contribution during the proposal development and grant application process to Nepal Health Research Council. Authors would also like to thank Nepal Health Research Council for awarding the grant to conduct this study (grant award number 21).

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

1. UNICEF, WHO. Progress on Drinking Water, Sanitation and Hygiene: 2017 Update and SDG Baselines. World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), 2017. [Accessed April 2020] Available from: <https://www.who.int/publications-detail-redirect/9789241512893>
2. Hutton G, Chase C. Water Supply, Sanitation, and Hygiene. In: Injury Prevention and Environmental Health. 3rd ed. The International Bank for Reconstruction and Development / The World Bank, Washington (DC). 2017. PMID: 30212108.
3. Ritchie H, Roser M. Water Use and Sanitation. 2018 [Accessed April 2020] Available from: <https://ourworldindata.org/water-use-sanitation>.
4. Bhatt CR, Adhikary TP, Adhikary D. Assessment of non-household toilet facilities in the Kathmandu Valley, Nepal. Sustainable Sanitation Practice. 2013;11-5.[Google Scholar]
5. Musa G, Hall CM, Higham JE. Tourism sustainability and health impacts in high altitude adventure, cultural and ecotourism destinations: A case study of Nepal's Sagarmatha National Park. Journal of Sustainable Tourism. 2004 Jul 1;12(4):306-31.[Article]
6. The Travel & Tourism Competitiveness Report. The World Economic Forum. Geneva, Switzerland. 2019 [Accessed April 2020] Available from: http://www3.weforum.org/docs/WEF_TTCR_2019.pdf
7. Bauer IL. Tourism and the environment, the other side of the coin: Environmental impact on tourists' health. Tourist Studies. 2001 Dec;1(3):297-314.[Article]
8. Baaten GG, Sonder GJ, Van Der Loeff MF, Coutinho RA, Van Den Hoek A. Fecal-orally transmitted diseases among travelers are decreasing due to better hygienic standards at travel destination. Journal of travel medicine. 2010 Sep 1;17(5):322-8.
9. Angelo KM, Kozarsky PE, Ryan ET, Chen LH, Sotir MJ. What proportion of international travellers acquire a travel-related illness? A review of the literature. Journal of travel medicine. 2017 Sep;24(5):tax046.[Article]
10. Leder K. Environmental: Advising travelers about management of travellers' diarrhoea. Australian Family Physician. 2015 Jan;44(1/2):34-7.[Article]
11. Hutton G, Rodriguez UE, Napitupulu L, Thang P, Kov P. Economic impacts of sanitation in Southeast Asia. Jakarta: World Bank. 2008.[Google Scholar]
12. Elledge MF, McClatchey M. India, urban sanitation, and the toilet challenge. RTI International/RTI Press; 2013 Sep 16. [Accessed April 2020] [Download PDF]
13. Leder K, Torresi J, Libman MD, Cramer JP, Castelli F, Schlagenhauf P, et al. GeoSentinel surveillance of illness in returned travelers, 2007–2011. Annals of internal medicine. 2013 Mar 19;158(6):456-68.[Article]
14. Ekdahl K, de Jong B, Andersson Y. Risk of travel-associated typhoid and paratyphoid fevers in various regions. Journal of travel medicine. 2005 Jul 1;12(4):197-204.
15. Adventure Alternatives (2018). [Accessed April 2020] Available from: <https://www.adventurealternative.com/adventure-blog/nepal-named-as-no-1-travel-destination-in-2017/>
16. Government of Nepal. Nepal Tourism Statistics 2018. Ministry of Culture, Tourism & Civil Aviation Planning & Evaluation Division Research & Statistical Section Singha Durbar, Kathmandu 2019. [Download PDF]
17. Travel Statistics by Age Group [Accessed April 2020] Available from: <https://www.thewanderingrv.com/>

- [travel-statistics-by-age-group/](#)
18. Government of Nepal. Nepal Tourism Statistics 2019, Ministry of Culture, Tourism and Civil Aviation, 2020 [Accessed April 2020] [[Download PDF](#)]
 19. World Health Organization (WHO). Travel Precautions, 28th April 2020 [Accessed May 2020] Available from: <https://www.who.int/westernpacific/news/q-a-detail/travel-precautions>
 20. Travel Health Nepal. Rough Guides [Accessed March 2021] Available from: <https://www.roughguides.com/nepal/health/>
 21. Aryal KK, Joshi HD, Dhimal M, Singh SP, Dhakal P, Dhimal B, Bhusal CL. Environmental burden of diarrhoeal diseases due to unsafe water supply and poor sanitation coverage in Nepal. *J Nepal Health Res Council*. 2012 May 1;10(21):125-9.
 22. OSAC, US Embassy in Kathmandu, Nepal. Nepal 2019 Crime and Safety Report [Accessed April 2021] Available from: <https://www.osac.gov/Country/Nepal/Content/Detail/Report/dc6d257a-ba2e-4030-b085-15f4aeb67587>
 23. Cairncross S, Bartram J, Cumming O, Brocklehurst C. Hygiene, sanitation, and water: what needs to be done?. *PLoS medicine*. 2010 Nov 16;7(11):e1000365. [[Article](#)]
 24. Budhathoki CB. Water supply, sanitation and hygiene situation in Nepal: a review. *Journal of Health Promotion*. 2019 Sep 8;7:65-76. [[Article](#)]
 25. Pathak K . The Kathmandu Post. Published on 12 Nov 2019 [Accessed April 2021] Available from: <https://kathmandupost.com/columns/2019/11/12/there-is-a-significant-dearth-of-public-toilets-in-nepal>
 26. Safe Drinking water for the travelers [Accessed March 2020] https://www.who.int/water_sanitation_health/gdwqrevision/travellers.pdf?ua=1
 27. Dong TB. Cultural tourism: An ethnographic study of home stay in Briddim Village, Nepal. *The Gaze: Journal of Tourism and Hospitality*. 2020 Jan 1;11(1):10-36. [[Article](#)]
 28. Shrestha HP. *Tourism in Nepal: marketing challenges*. Nirala Publications; 2000. [[Article](#)]