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Hygiene and Sanitation practices among slum dwellers of Tulatoli, Panchlaish, Chattogram, Bangladesh

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Abstract
Introduction: Poor hygiene and sanitation refer to conditions where individuals or communities do not have access to clean water, basic sanitation facilities such as toilets and do not practice proper hygiene habits such as hand hygiene, toilet hygiene, nail hygiene, clothing hygiene etc. These conditions can lead to the spread of infectious diseases such as diarrhea, cholera and typhoid fever.
Results: In the investigation area of Tulatoli, Panchlaish, Chattogram, Bangladesh, 43.48% and 56.52% of total respondents brush teeth twice or once daily respectively. Regular and irregular shower is taken by 86.23% and 13.77% respondents accordingly. The causes of irregularity were found to be physical illness, interrupted water supply or simply lack of interest. 127 respondents (92.03%) wash their hand before and after their meal. In the respected field the data shows that 84.05% use latrine. 47.10% respondents dispose waste products properly and the remaining 52.90% people dispose waste products everywhere.
Conclusion: The sanitation system and personal hygiene among the dwellers of Tulatoli slum, Chattogram, Bangladesh is satisfactory but there is a huger scope to develop it. Still a little government approach towards health education and infrastructural assistance can ensure them an upgraded living quality as well as mental and physical well-being.

Keywords: hygiene, practices, sanitation, slum area

Introduction

Lack of hygiene and sanitation sense is a major problem in developing countries. People who overlook hygiene need, put themselves at the risk of illness, infection and poor dental health. On the other hand, improper waste dispersal causes water and soil pollution. It contaminates and affects ground water as well as surface water resulting in disease such as dysentery, diarrhea, cholera, typhoid, polio, meningitis, hepatitis etc. About 2.6 billion people - half of the developing world - lack even a simple 'improved' latrine and 1.1 billion people have no access to any type of improved drinking source of water [1]. As a direct consequence, 1.6 million people die every year from diarrheal diseases (including cholera) attributable to lack of access to safe drinking water and basic sanitation and 90% of theme are children under 5, mostly in developing countries [2].

Himachal Pradesh has mostly a rural population of about 6.9 million. Household toilet coverage in rural areas of Himachal Pradesh was estimated at about 28% in 2004, which was reported over 90% in 2010. However, solid and liquid waste management practices did not reflect the significant change seen with respect to reduction of open defecation and toilet usage [3]. In 2008, UNICEF conducted a household survey on water, hygiene and sanitation in nine districts of Mozambique. The survey was designed to cover 1,600 households, of which half were in the target stratum and half in the control stratum. The vast majority of households do not use an improved water source: 85% of the households in the project area use unimproved water source (in most cases this is an unprotected well or water from a river or stream). In the target clusters, this percentage is even higher, at 89%. High levels of microbiological contamination- microbiological samples were taken both at household level and at their respective water points. The results indicate a considerable increase in contamination from the source to the household [4]. Around 54 per cent of al household members in the project area still practice open defecation, against 28% for the whole of sub-Saharan Africa. Only 2% uses an improved facility, the vast majority of household members practice hand washing, however only 1% use both running water and soap or ash. More than 85% of households use adequate practices for disposing of children's feces [4].

In Asia, Bangladesh, one of the fastest growing urban country where near about 7 million people live in urban slums had no access to safe water, sanitary latrine, proper waste disposal systems and adequate sewerage system. Only 32% of the rural people use sanitary latrine. A survey in SHEWAB's (sanitation hygiene, education and water supply in Bangladesh) working area shows that people using improved sanitation in urban area has increased from 39.6% in 2007 to 79%, in 2010 and in rural area from 53% in 2007 to 90% [3]. 160 million people are infected with schistosomiasis causing tens of thousands of deaths yearly; 500 million people are at risk of trachoma from which 146 million are threatened by blindness and 6 million are visually impaired [4]. Diarrhea and many others water borne diseases are plaguing the developing world due to inadequate drinking water, sanitation and hygiene with 133 million suffering from high intensity intestinal helminthes infections; there are around 1.5 million cases of clinical hepatitis every year [4]. Maintaining proper hygiene may lead to beneficial effect on the health of the general population in a community. For example, washing hands with soap could reduce diarrhea by almost 50% and

respiratory infection by nearly 25% [6]. Therefore, maintaining hygiene is an indispensable part of maintaining health and preventing disease and infirmity.

Bangladesh has made considerable progress towards providing universal access to improved water sources. About 83% and 71.9% of the urban and rural population had improved water sources on their premises [7]. Between 2009 and 2013 about 1.6 million people gain access to arsenic-safe water. 98% of the population used improved water sources.74% of improved water sources were available on premises. 58% of water sources complied with Bangladesh standard for *E. coli* (<1CFU/100 ml). 53% of population collected water from a source that meets Bangladesh standard for both arsenic and *E. coli*. Only one in four used appropriate water treatments method. Mortality from cancer increases with exposure to high arsenic concentrations in drinking water. Arsenic contamination occurs 13.8% from tube wells, 2.9% surface water and 2.6% tap water. *E. coli* contaminations occur 46.3% tap water and 3.6% tube wells [8].

The objective of the study was to find out the sanitation system and practice of personal hygiene among the slum dwellers of Tulatoli, Panclaish, Chattogtram, Bangladesh.

Materials and Methods

A descriptive cross sectional study was carried out in one slum area in Tulatoli, Pancalish, Chattogram, Bangladesh. A sample size of 138 households was determined based onthe84.05% sanitation coverage in Tulatoli, Pancalish, slum. A multi-stage systematic random sampling technique was used in this study. Interview was conducted from individual married men or women using structured interview schedule. Observation checklist was also administered for collecting primary data and information. Written permission to conduct the study was obtained from the Public Health Programme of Bangladesh Open University. Propose of the study was explained and verbal consent was obtained from each study subject before conducting the interview. Special attention was also given to maintain the privacy and confidentiality. After data collection, compilation was done and the data were presented with tables and figures. Result was calculated according to study objectives with the help of Microsoft Excel 2013 software.

Results

Socio-demographic information of respondents: Among 138 respondents interviewed; more than one-third of the respondents (28.98%) were of age group 38-42, with mean age (38.35±1.43) year (Fig. 1). Majority of the respondents (90.58%) were Muslims (Fig. 2). About more than half of the respondents (54.35%) were illiterate (Fig. 3). About one-fourth of the respondents (25.36%) were housewife (Fig. 4).138 respondents' 45.65% male and 54.35% female (Fig. 5). Both male and female 25 respondents (18.11%) involved on smoking and 36.23% betel-leaves personal habit (Fig. 6).

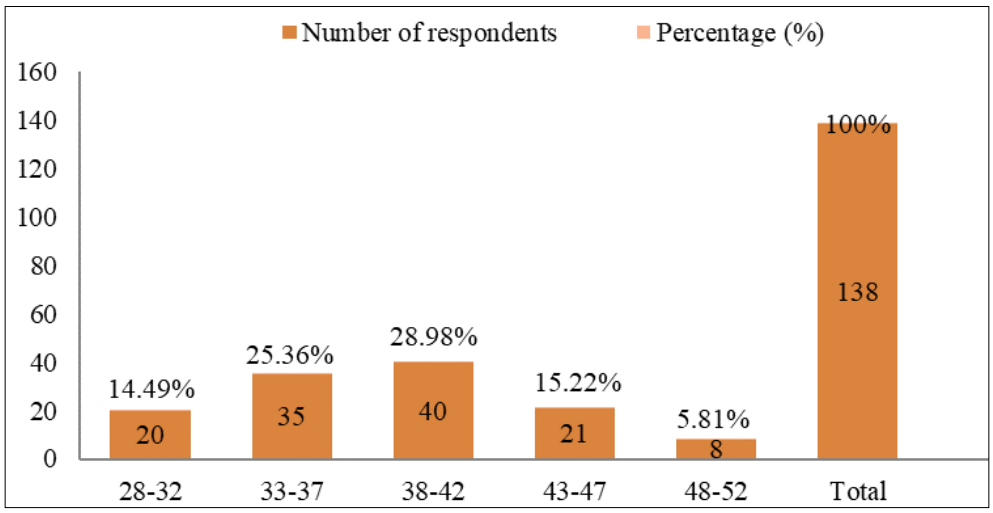

Fig 1: Regarding on the age group (n=138)

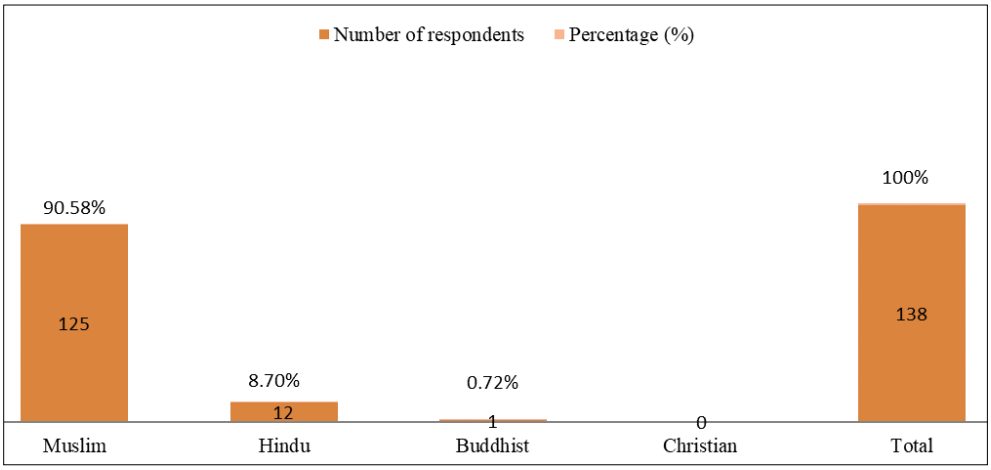

Fig 2: Regarding on the religion (n=138)

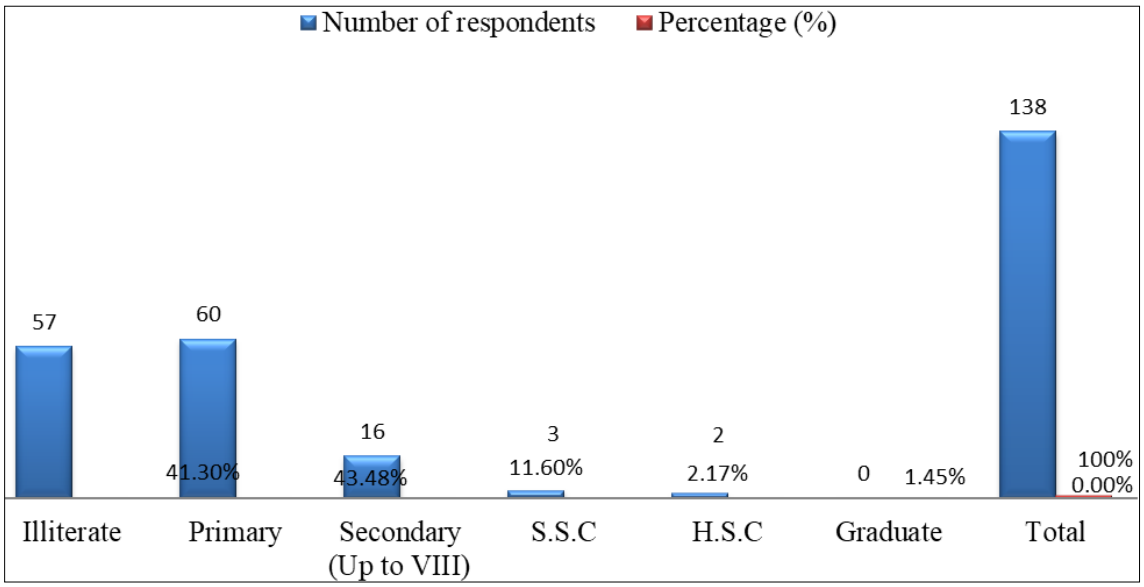

Fig 3: Regarding on the education (n=138)

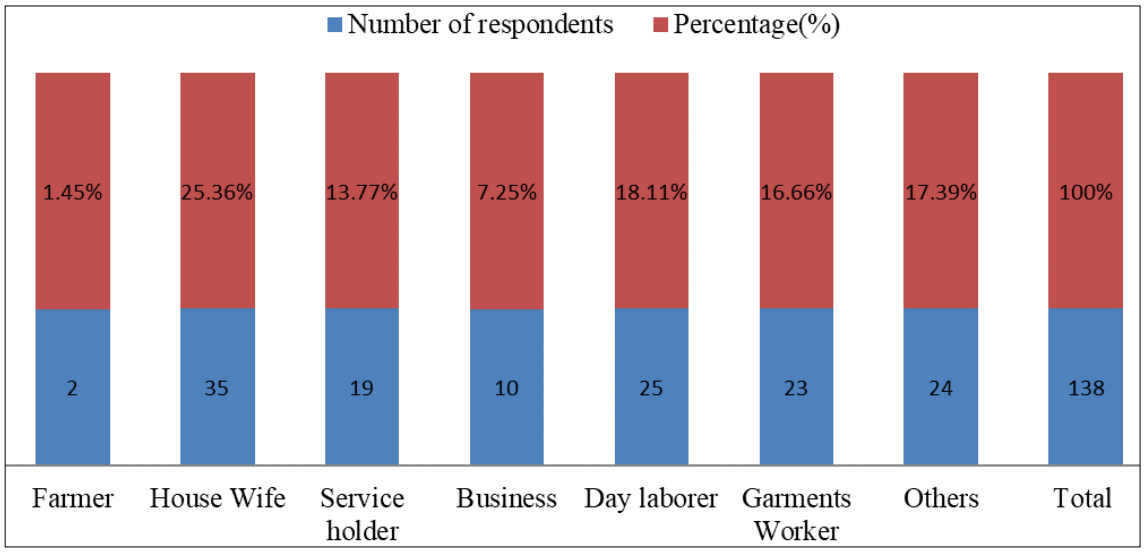

Fig 4: Regarding on occupation (n=138)

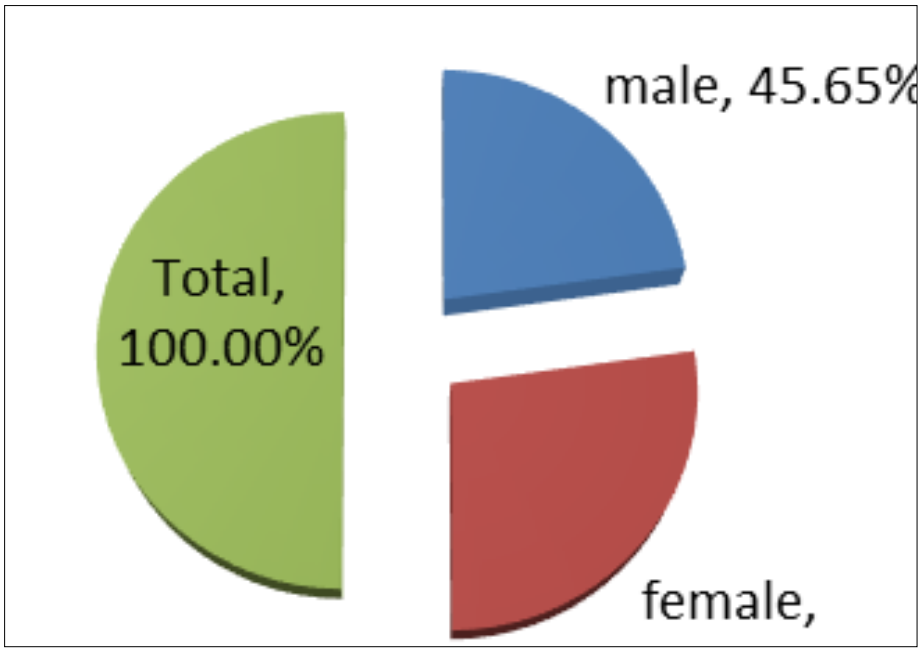

Fig 5: Regarding on male and female (n=138)

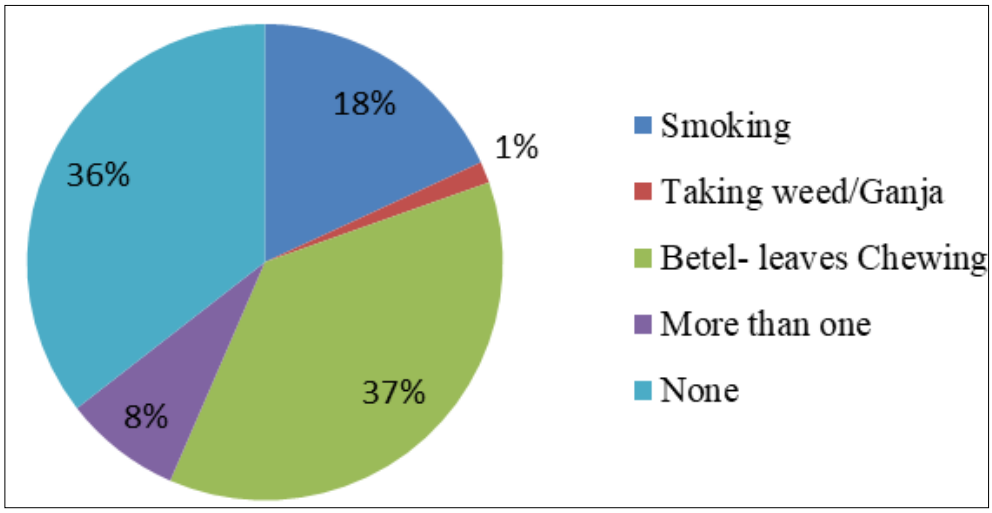

Fig 6: Regarding on personal habit (n=138)

Information regarding availability, use and maintenance of latrine: Most of the households (84.05%) had latrine. Only 15.95% of the respondent lack toilet in their residence. Most of the respondents were aware of the importance of cleanliness of latrine (Table 1).

Table 1: Information regarding availability, use and maintenance of latrine (n=138)

Uses of Latrine	Number of respondents	Percentage (%)
Sanitary latrine	116	84.05
Unsanitary latrine	22	15.95
Total	138	100

Information regarding personal hygiene of respondents
The study revealed that 96.03% respondents used to wash their hands with soap water after defecation, 92.03% respondents washed their hands before meal, 70.1% used to brush their teeth daily and 86.23% respondents reported bathing daily (Table 2).

Table 2: Information regarding personal hygiene (n=138)

Variables	Frequency	Percentage (%)
Number of people washing their hands after defecation		
Yes	133	96.30
No	05	3.70
Number of People washing their hands before meal		
Yes	127	92.03
No	11	7.97
Materials used during brushing		
Tooth powder	25	18.11
Toothpaste	45	32.61
Coal/Ash	58	42.03
Frequency of brushing teeth		
Once a day	97	70
Twice a day	25	18
Rarely	17	12
Frequency of bathing		
Regularly	119	86.23
Irregularly	19	13.77

Information regarding Food
More than two-third of the respondents (70.29%) always cover their food, 45.65% respondents always take unhygienic food from road side shops and other sources. (Table 3).

Table 3: Information regarding food (Total respondent n=138)

Variables	Frequency	Percentage (%)
Covering the food		
Always	97	70.29
Sometimes	29	20.01
Never	12	8.70
Unhygienic food		
Always	63	45.65
Sometimes	50	36.23
Never	25	18.12

Information regarding waste disposal
More than half of the respondents (52.90%) yet dispose their waste in the surroundings. Only 47.10% respondents dispose their waste properly (Table 4).

Table 4: Information regarding waste disposal (n=138)

Variables	Frequency	Percentage (%)
Method of waste disposal		
Dustbin	65	47.10
Surroundings	73	52.90

Findings of observation on personal hygiene
It was found that 58% respondents kept nail clean weekly, 65% had kept hair clean by shampoo or soap. 68.11% respondents use slipper while going to toilet but 31.89% do not use any slipper. (Table 5).

Table 5: Findings of observation on personal hygiene (n=138)

Variables	Frequency	Percentage (%)
Nail		
Clean weekly	80	58
Twice monthly	12	8.69
Monthly	14	10.14
More than a month	32	23.18
Hair		
By shampoo/soap	90	65
By water	48	35
Toilet Slipper		
Yes	94	68.11
No	44	31.89

Discussions
This descriptive type of cross-sectional study was carried out on 138 respondents living in a slum of an urban area Tulatoli, Panchlaish, Chattogram, Bangladesh, with a view to studying the awareness of the slum dwellers about

maintaining personal hygiene and sanitation. In the selected study area, the percentages of Muslim were 90.58 and Hindu 8.70, whereas Shukla *et al.* [9] mentioned that Muslims are 2.8% and Hindu 94%. It was found that 57 (41.30%) respondents were illiterate which was according to Hassan [10] (17.4%), Shukla *et al.* [9] (4.4%). 60 respondents (43.48%) completed primary level, 16 respondents (11.60%) complete up to class eight standard educations. Only 3 respondents (2.17%) completed secondary level, only 2 respondents (1.45%) completed higher secondary education. Among 138 respondents, 63 (45.65%) were male and 75 (54.35%) were female. It was found that Shukla *et al.* [9] female respondents were 22.3%.

Total 116 respondents (84.05%) were found to use latrine where Ahmed *et al.* [11] (50.17%), Raihan *et al.* [12] (22%) Farah *et a1.* [13] (59%) and Hassan [10] (65.6%) mentioned the given number. Both the government and NGOs have played a very significant role in developing this upper standard of sanitation in the selected area [14]. Number of people washing their hands after defecation was 96.30%, Farah *et al.* [13], 45.3%, Hassan [10] 75.3%. Number of People washing their hands before meal was 92.03% Farah *et al.* [13], 46%. This finding is different from a project area of UNICEF, where 70% of the slum dwellers are accustomed to washing hands after defecation. In a slum of Karwan Bazar, Dhaka, it was found 76% respondents practiced washing of hands before eating and 93% washed their hands with soap or ash after using toilet [15]. All the above data provided a picture that most of the respondents were more or less aware of maintenance of personal hygiene. They also informed that government and many non-government organizations were helpful in this regard by providing education and awareness on sanitation system and personal hygiene maintenance.

As brushing materials 39 people (25.82%) use tooth powder, 45 (32.61%) use toothpaste, 58 (42.03%) use cola or ash, 10 (7.25%) use Meswak. Fara *et al.* [13] noted that 46% of the respondents used toothpaste and the rest 54% of the respondents used others materials. Out of 138 respondents only 97 respondents (70%) brush teeth twice daily and 25 respondents brush teeth (18%) once daily and 17 respondents (12%) rarely brush their teeth. Acharya *et al.* [16] mentioned that the numbers were 70.1%, 17.9% and 12% accordingly. 119 respondents (86.23%) take shower regularly and 19 respondents (13.77%) irregularly. Acharya *et al.* [16] found 17.9% respondents taking regular shower. However, Farah *et al.* [13] stated the number to be 81%. The causes of irregularity were found to be physical illness, interrupted water supply or simply lack of interest. 127 respondents (92.03%) wash their hands before and after their meal. Shukla *et al.* [9] found 92.43% respondents washing hands before and after their meal.

It was found that, 65 respondents (47.10%) dispose waste products properly and remaining 52.90% people dispose waste products in the nearby marsh, which is a breeding place for flies and mosquitoes. It was astonishing that a lot of respondents (69.53%) did not even think of any measures to get rid of flies. This is surely a sign of ignorance of the slum dwellers about the fly borne diseases. 90 respondents (65.22%) were found to maintain average cleanliness of their home and the surroundings. In a survey conducted jointly by UNICEF and Care Bangladesh, it was found that 30% of the slum dwellers dispose their wastes properly [17]. According to Acharya *et al* [16], More than one-third of the households (36.6%) used to deposit waste water haphazardly in to street.

So, much emphasis has to be laid upon the sanitation System and hygiene maintenance, both by government and other organizations. The study shows that there are circumstances that require intense care and awareness.

Conclusion

The sanitation system and personal hygiene among the dwellers of Tulatoli slum, Pancalish, Chattogram, Bangladesh is satisfactory but the socio-economic demography is not well enough. A few government approaches towards health education and infrastructural assistance can assure them an upgraded living quality and mental and physical well-being. Various programs on sanitation and personal hygiene with direct involvement of respondent should be conducted to raise awareness.

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Author contributions

Tapash Kumar Bhowmik were involved in conception, design and preparation of the questionnaire. Janardhan Debnath, Jewel Chowdhury, Rajib Barua, Rakesh Das contributed to perform the preparation of the questionnaire, primary data collection, data entry, data analyzed and drafting the article. Tapash Kumar Bhowmik contributed critically revising for important intellectual content and finally approved for publication.

Conflicts of interest

Authors declared that they have no conflict of interest.

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