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Need for sensitization on serious threats of second-hand smoke: Findings from a national study in Mauritius, a small island developing state in the Indian Ocean

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ABSTRACT

This study had the following objectives: To assess the level of knowledge of Mauritians aged ≥ 20 years on the health effects of Second Hand Smoke (SHS), to investigate their behaviour when exposed to SHS and to look for any association between SHS-related knowledge and behaviour towards exposure. A national cross-sectional online survey was conducted. With the total population of Mauritians above the age of 20 years being 941,719, the calculated sample size was 400. A validated questionnaire was used to collect data among respondents from all 9 districts of the island of Mauritius, with representative district-wise samples. Data analysis was carried out using SPSS version 19.0. Considering the findings of the study, there were 408 respondents: Two-thirds of participants showed good knowledge of the harmful effects of SHS. Participants were aware of the link of SHS to respiratory diseases, nonetheless, they were not aware of its causes for non-respiratory diseases. One out of four participants (25.5%) were not aware that maternal passive smoking causes preterm delivery. More than one-third of the participants (37.3%) did not know that passive smoking causes sudden infant death syndrome. Inadequate levels of knowledge were also revealed by authors in other developing countries. We thus recommend bold sensitization campaigns about the serious threats of SHS. We highlight the pertinence of longitudinal cohort studies with assessment of SHS-related knowledge/behaviour before and after health education campaigns, in Mauritius and other developing countries.

1. Introduction

Exposure to Second Hand Smoke (SHS) is a global public health issue. There is unequivocally established evidence of the links between SHS and increased risks of Sudden Infant Death Syndrome (SIDS) (National Cancer Institute (NCI), 1999), low birth weight in babies whose mothers were exposed to SHS (USDHHS, 2006), lower respiratory tract infections in infants and children exposed to parental smoking (USDHHS, 2006), middle ear disease in children (USDHHS, 2006), asthma in children exposed to parental smoking (USDHHS, 2006), lung cancer in non-smokers exposed to SHS2, (Hecht, 2012), bladder cancer (Yan, 2018), cardiovascular diseases5, (Dunbar et al., 1995), cerebrovascular accidents7, (Iribarren, 2004). (Lee, 2017), Chronic Obstructive Pulmonary Disease (Hagstad, 2014) and Type 2 Diabetes Mellitus11, (Sun, 2014) in non-smokers.

There is well-established evidence that SHS exposure is associated with public health harm. Nonetheless, there is increasing evidence of the lack of knowledge, in various populations in different developing countries, of the health harms of SHS exposure, in particular the serious threats to women, infants and children. Singh and Lal (2011) referred to SHS exposure as a neglected public health challenge (Singh and Lal, 2011). Vu et al. (2020) demonstrated the inadequate knowledge of pregnant women in Vietnam about SHS and its health-related hazards (Vu et al., 2020). Nan et al. (2020) showed that women, in Inner Mongolia, Northern China, had low levels of knowledge about the dangers of SHS exposure and deplored the sparse attention provided to the education of the general public about the dangers of SHS (Nan et al., 2020). A study by Alzahrani (2020) in Saudia Arabia revealed the

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inadequate level of knowledge of medical students about health risks related to SHS exposure (Alzahrani, 2020). Ndlovu et al. (2020) highlighted the high prevalence of exposure to SHS in health institutions in Zimbabwe and provided evidence for the need to train relevant stakeholders in developing countries on the dangers of SHS exposure (Ndlovu et al., 2020).

Considering the case of Mauritius, which is a small island developing state, lying on the east coast of Madagascar in the Indian Ocean, there have been studies investigating the SHS-related knowledge of university students (Nuzooa, 2015) and primary school teachers (Chan Sun and Frédéric, 2020). These studies showed that there was a lack of knowledge pertaining to the causal relationship between SIDS and SHS among 51.4% of primary school teachers (Chan Sun and Frédéric, 2020) and 57.2% of university students (Nuzooa, 2015). There was also a lack of knowledge among 62.5% of primary school teachers (Chan Sun and Frédéric, 2020) and 62.4% of university students (Nuzooa, 2015) about the SHS-related causes of ear infections in children. Moreover, 58.5% of university students were not aware of the health hazards of SHS on pregnant women while 41.7% of them did not know that SHS causes immediate adverse effects of the cardiovascular system.

The lack of knowledge of the health hazards of SHS among subpopulations with high level of education in Mauritius is a cause for concern and thus lends support to the need to investigate the level of knowledge among medium and low level of education. The need for a national study with a view to inform decisions at national level on health education programmes on SHS was thus formulated (Chan Sun and Frédéric, 2020). As at to date, there is an absence of studies pertaining to the wider population of adults of different education levels, socioeconomic backgrounds and other demographics. In addition to the identified gap, there is apprehension about the high exposure among non-smokers to SHS: Over 50% of men aged 19–24 years of age are smokers in Mauritius ([20]) while the overall prevalence of smokers in men (38.0%) is high and that of women (3.9%) is increasing slowly but surely.

In light of the prevailing situation in Mauritius, this nationally representative survey of Mauritians was designed with the following objectives: (1) To assess the level of knowledge of Mauritians regarding the health effects of second-hand smoke, (2) To investigate the behaviour of adults when exposed to second-hand smoke and (3) To analyze whether there is an association between knowledge of the deleterious effects of second-hand smoke and behaviour towards exposure.

2. Methods

A cross-sectional study among Mauritian adults $\geq$ 20 years living on the Island of Mauritius was undertaken.

2.1. Sampling method

Based on the local context whereby there was an absence of studies on the topic, we had no idea about the behaviour of the Mauritian population and we believed that the population proportion to be around 0.5. We thus used Slovin's formula in line with Ellen (2020) who highlighted the relevance of Slovin's formula when nothing is known about the behaviour of a population and also with reference to Tejada and Punzalan (2012) who proved this formula to be very appropriate whenever a population proportion is unknown and is believed to be close to 0.5. The confidence interval used in this study being 95% also lent support to the use of Slovin's formula which is specifically recommended for studies in which the confidence interval is set at 95%" (Tejada and Punzalan, 2012, 129).

By using Slovin's formula (Glen, 2012), the sample size was calculated as follows: Sample size, $n = \frac{Nx}{(N-1)E^2 + x}$, where $x = z^2 p\,(1-p)$

N was the total population above the age of 20 years (941,719) (Office of the Electoral Commissioner, 2019). Considering a confidence level of 95% (therefore, $z = 1.96$), margin of error, $E = 0.05$ and Response rate, $p = 50\%$, we found the calculated sample size to be 384.

2.2. Data collection

Data collection was undertaken using the questionnaire validated by Chan Sun and Frédéric (2020) between May and September 2020. The online questionnaire was created using Google Forms: The created link provided access to a covering letter with information about the study, including its anonymous characteristics. Informed consent had to be provided before access to the self-administered questionnaire.

Participants were recruited through mobile platforms such as WhatsApp, social media like Facebook, as well as through e-mail with the help of colleagues, students, friends and relatives. The constitution of the samples of the district-wise population, from each of the 9 districts of the island of Mauritius, was based on data from the Office of the Electoral Commissioner (Office of the Electoral Commissioner, 2019) and the Population and Vital Statistics Report of 2018 (Statistics Mauritius. Population and Vital Statistics Republic of Mauritius, Year, 2018). It was done in such a way that it reflected the percentage of population in each district. Hence the sample for each district gave a good representation of the population for the corresponding district. Hence no weighting was used for any adjustment.

2.3. Measures

The instrument had three components: Demographics, SHS-related Knowledge and SHS-protective Behaviour. The demographic part included questions about gender, age, occupation, monthly salary, residential area (urban, semi-urban, or rural), district, level of education and lastly, frequency and location of any SHS exposure over the preceding month.

Knowledge was evaluated using an 11 item, 5-point Likert Scale (Cronbach's Score $\alpha = 0.885$) and scores summed up to yield a total score between 0 and 44. The higher the score, the better the knowledge was considered to be. In this section, question 10 was a reverse question.

Behaviour, meanwhile, was also assessed with the help of a 10 item, 5-point Likert Scale (Cronbach's Score $\alpha = 0.786$) and scores summed up to get a total score lying between 0 and 40. Again, the higher the score, the behaviour was considered to be most favourable. Among the questions for this part, questions 6, 9 and 10 were reverse questions.

Each of the five responses on the Likert scale had a corresponding numerical value as follows: Strongly Disagree (0), Disagree (1), Neither Agree Nor Disagree (2), Agree (3) and Strongly Agree (4). The grading of the knowledge score, worked out by El Sherbiny et al. (2010), was used as follows: "Good knowledge" if the score obtained was above 75%, "Satisfactory knowledge" if the score was between 50 and 75 % and "Poor knowledge" if the score was less than 50% of the total score.

2.4. Data analysis

IBM Statistical Package for Social Sciences (SPSS) version 20.0 was used to record data and for statistical analysis. For all inferential analyses, a p-value of less than 0.05 was treated as statistically significant. The association between the variables under study were established using correlation and linear regression.

2.5. Ethics

Approval from the Department of Medicine Research Ethics Committee of the University of Mauritius was obtained before the start of data collection.

3. Results

Regarding the study objectives, both descriptive and inferential

analyses were undertaken.

3.1. Demographics

There were 408 respondents, with 55.9 % of female respondents, 67.2% of respondents being aged 20–39 years (67.2%), including 34.1% who were 20–29 years of age. Also, 87.3% of respondents resided in either urban or rural residential areas, in slight favour of urban (45.8%), thus justifying the distribution of sample residents per district: Plaines Wilhems (30.9%), Port Louis (15.0%) and Pamplemousses (12.7%). With regards to employment status, 70.6% of respondents were full-time employees, while 13.5% of them were students. Total monthly income, was expressed in local currency, the Mauritan Rupee (Rs) which as an indication is equivalent to 0.17 GBP, 0.20 Euro and 0.22 USD in 2021. There were 70.1% of respondents who earned at most Rs 50000 per month (with most of them earning Rs 20000–50000 monthly) whereas 19.1% and 10.8% had a total monthly income of Rs 50001–80000 and more than Rs 80000 respectively. Concerning the level of education, a substantial proportion of 69.9% had already completed their Bachelor's degree, while 19.9% of respondents studied up to Higher School Certificate (HSC) level.

3.2. Descriptive analysis

3.2.1. Knowledge

The 11 statements under *Knowledge* of SHS in the questionnaire were all measured on the five-point Likert scale ("Strongly disagree" to "Strongly agree"), whereby the five options were assigned scores of 0 to 4 respectively. Thus, the maximum score that could be achieved by a participant was 44. Knowledge scores were graded into three categories: good (more than 75% of correct answers), satisfactory (50%–75% of correct answers) and poor (less than 50% of correct answers). It was found 66.7% of respondents had a good knowledge of SHS, whereas 32.6% of them had satisfactory knowledge. Only 0.7% of them had poor knowledge of SHS. Table 1 above shows the 11 questions of the scale, sorted in descending order of percentage of correct answers.

Table 1
Percentage of correct, most frequently incorrect and no answers for knowledge.

Item no.	Question	Correct answer	Most frequent incorrect answer	No answer
2.	Cigarette smoke contains toxic substances	99.1%	0.7%	0.2%
1.	Breathing smoke from other people's cigarette is harmful to one's health	97.8%	0.7%	1.5%
3.	There is no safe level of exposure to cigarette smoke	91.9%	3.0%	5.1%
6.	The risk of coronary heart disease increases with exposure to passive smoking	89.7%	1.0%	9.3%
8.	Maternal exposure to cigarette smoke during pregnancy causes low birth weight baby	87.3%	0.7%	12.0%
4.	There have been cases where non-smokers developed lung cancer because of exposure to cigarette smoke	86.3%	1.0%	12.7%
7.	Exposure to passive smoking increases the risk of developing a stroke	82.4%	0.9%	16.7%
5.	Exposure to cigarette smoke has immediate adverse effects on the heart	81.8%	3.2%	15.0%
10.	Maternal passive smoking causes preterm delivery	74.5%	1.0%	24.5%
9.	Passive smoking causes sudden infant death syndrome	62.7%	2.5%	34.8%
11.	Children exposed to cigarette smoke are at increased risk of having ear infections	48.6%	7.8%	43.6%

3.2.2. Behaviour

Table 2 shows the behaviour of participants towards SHS. The responses to the Likert-type statements under *Behaviour* in the questionnaire were analysed by the use of summary statistics (means and standard deviations). The statements were then ranked in descending order of means to know the extent of agreement with each by respondents while bearing in mind that the neutral point of the Likert scale was 2. Means below 2 for the last two statements showed that the majority of respondents would object if someone travelling with them in a car started to smoke ($M = 1.79$) and that they would not allow visitors to smoke in their houses ($M = 1.60$).

3.3. Inferential analysis

3.3.1. Analysis of knowledge by demographic variables

The data analysis revealed that only two demographic variables had a significant incidence over knowledge scores at the 5% level, namely *total monthly income* ($p = 0.027$) and *level of education* ($p = 0.040$).

Multiple linear regression analysis, after verification of the six main data assumptions, in line with Dart (2019) (Office of the Electoral Commissioner, 2019); revealed that only predictor, level of education, was significant at the 5% level.

3.3.2. Correlation between knowledge and behaviour

Correlation analysis was conducted was to know whether *Knowledge* and *Behaviour* were sufficiently correlated before implementing simple regression analysis to test whether *Knowledge* of SHS is a significant predictor of *Behaviour* towards SHS. Fig. 1 shows the scatter diagram of *Behaviour* against *Knowledge* scores which was plotted to ensure whether their relationship is linear before conducting simple regression. The relationship between the two variables is approximately linear, indicated by the green trend line. Since both of them were numerical variables (total scores), Pearson's correlation coefficient was used in SPSS to measure the extent of the relationship between them, as shown in Table 3 below. The figures show that there was a significant positive correlation between *Behaviour* and *Knowledge*.

3.3.3. Regression of knowledge on behaviour

Multiple regression analysis was carried out to investigate the impact of *Knowledge* on *Behaviour* while controlling for confounding

Table 2
Behaviour towards SHS.

Item no.	Question	Mean	Standard deviation
5.	I try to spend as little time as possible in places where smoking is prevalent	3.11	1.025
7.	If I was travelling by taxi and the driver started smoking, I would ask him to stop smoking	3.08	1.050
2.	I normally reduce the duration of my conversation with a person who is smoking	2.93	1.168
3.	I avoid being part of a group of persons who are smoking	2.79	1.199
1.	In case of exposure to the smoke of a stranger's cigarette, I ask him/her to put it out	2.70	1.118
4.	I avoid talking to someone if he/she is smoking	2.70	1.217
8.	I avoid cigarette smoke only because I do not like its odour	2.28	1.311
6.	I do not have any problem with having a chat with my family members when they are smoking	2.15	1.226
10.	If I were travelling in a car with other people and one of them started to smoke, I would not object	1.79	1.277
9.	Visitors are allowed to smoke in my house	1.60	1.348

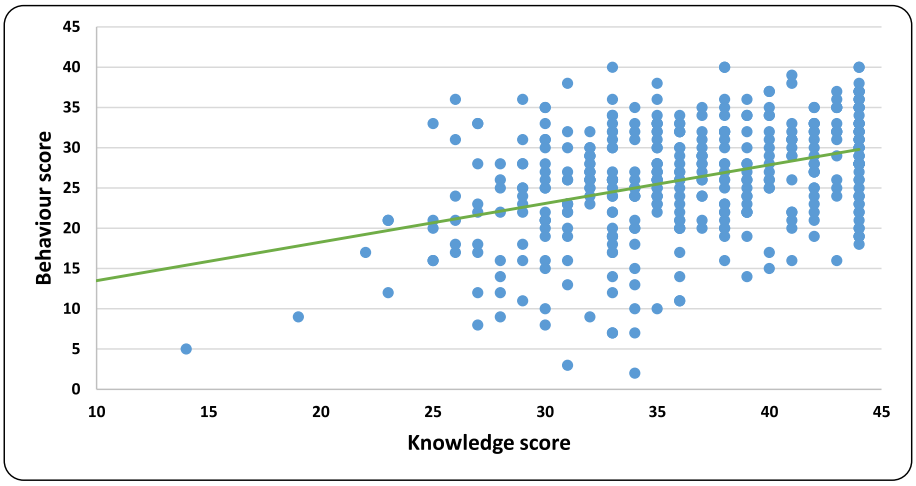

Fig. 1. Scatterplot of Behaviour against Knowledge.

Table 3
Correlations.

		Knowledge	Behaviour
Knowledge	Pearson correlation	1	**0.400****
	Sig. (2-tailed)		0.000
	N	408	408

**. Correlation is significant at the 0.01 level (2-tailed).
The figures show that there was a significant positive correlation between *Behaviour* and *Knowledge*, thus justifying the testing of a simple regression model with *Knowledge* as a predictor of *Behaviour*.

demographic variables, namely gender, age group, residential area, employment status and level of education of respondents.

Before conducting regression analysis, eight data assumptions were checked (Dart, 2019). Besides the condition that the dependent variable *Behaviour* should be measured on a continuous scale, which was satisfied, one outlier was found and removed, leaving the total number of observations at 407. On re-running regression, each standardized residual was found to have a magnitude not exceeding 3.29 (Dart, 2019). There was also no evidence of multicollinearity, given that all VIF values were less than 10 (Hair et al., 2013). Moreover, the Durbin-Watson statistic was 1.868 (between 1 and 3), so that residuals had no serial autocorrelation among them (Garson, 2012). According to the SPSS-generated histogram and normal *P-P* plot, standardised residuals closely followed the standard normal distribution with a mean of 4.16×10^{-16} and a standard deviation of 0.993. The scatterplot of standardised residuals showed no evidence of homoscedasticity, with a point cloud of consistent width that clearly showed a linear relationship between the independent and dependent variables. Lastly, all the independent variables had non-zero variances.

The significant *p*-value in Table 4 meant that the regression model was valid at the 5% level so that at least one of the β coefficients was non-zero. The model summary in Table 5 showed that the five demographic variables accounted for 8.5% of the variance in *Behaviour* and that *Knowledge* explained 14.0% of the total variance of 21.5%. Table 6 above, the table of coefficients, showed that *Knowledge* ($\beta = 0.379, t = 8.452, p < .001$) had a significant positive impact on *Behaviour* at the 1% level, despite the significant confounding effects of *gender* ($p < .001$), *age group* ($p = .003$) and *employment status* ($p = .003$) at the 1% level.

Table 4
ANOVA.[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4229.011	6	704.835	18.296	.000[b]
Residual	15409.859	400	38.525		
Total	19638.870	406			

a. Dependent Variable: Behaviour.
b. Predictors: (Constant), Knowledge, Gender, Age group, Residential Area, Employment status, Level of education.

4. Discussion

Regarding its objectives, this study provided the knowledge score and behavior trend of Mauritians ≥ 20 years old and demonstrated a positive correlation between knowledge and behaviour.

4.1. SHS-related knowledge

Considering the level of knowledge of the health effects of SHS, almost all participants (99.1%) were aware of the toxicity of cigarette smoke and the majority (91.9%) knew that there was no safe level of exposure to SHS. These findings corroborate with the studies, previously conducted in Mauritius, among university students (Nuzooa, 2015) and primary school teachers (Chan Sun and Frédéric, 2020). On the other hand, the current study showed that Mauritians were not aware of the potential harms to children's health, right from the womb. These findings are in line with those shown by Nuzooa (Nuzooa, 2015), Chan Sun and Frédéric (2020) and Evans et al. (2011) who showed that respondents knew about the effects of SHS on respiratory illnesses but not really about its effects on non-respiratory diseases18, (Chan Sun and Frédéric, 2020; Evans, 2012). Looking at specific questions, we found that 62.7% of participants were aware of the association between SHS and sudden infant death syndrome while Evans et al. (2011) showed that 55% of respondents were aware of this link (Evans, 2012). The increased risk of ear infections among children exposed to SHS was known by 48.6% of participants in Mauritius while it was known by 33% of participants in UK (Evans, 2012). In light of the percentage of unawareness about preterm deliveries (25.5%), sudden infant death syndrome (37.3%) and increased risk of ear infections among children (31.4%), the focus for the design of sensitization campaigns needs to be on the effects of SHS exposure to maternal and child health.

Considering the level of knowledge and socio-demographic factors, we found that education level was significantly associated with knowledge. Indeed, out of the participants who had good knowledge, 71.7% were degree holders. This is consistent with previous studies conducted both in Mauritius and in other countries among highly educated subgroups: Higher education was indeed associated with better knowledge levels on the health effects of SHS29-34, (Nan et al., 2020) while low

Table 5
Model Summary.[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R square change	F change	Sig. F change
1	.464[b]	**0.215**	0.204	6.207	0.140	71.435	**0.000**

a. (Constant), Gender, Age group, Residential area, Employment status, Level of education, Knowledge.
b. Dependent variable: Behaviour.

Table 6
Coefficients.[a]

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	4.407	3.241		1.360	0.175
Gender	2.329	0.627	0.166	3.716	**0.000**
Age group	0.848	0.279	0.159	3.039	**0.003**
Residential area	0.213	0.443	0.022	0.481	0.631
Employment status	−1.232	0.410	-0.158	−3.008	**0.003**
Level of education	0.464	0.383	0.055	1.210	0.227
Knowledge	0.448	0.053	0.379	8.452	**0.000**

a. Dependent Variable: Behaviour.

education level was associated with low knowledge of SHS35-37 (Nan et al., 2020). Higher education, higher influence of social norms and culture and moderate knowledge on exposure to SHS were considered as preventive factors associated with less exposure to SHS at home (Choudhury et al., 2020). In populations where formal education is not prevalent, there is a resultant low level of knowledge of the health effects of SHS and this leads to high exposure levels to SHS because people do not know or recognize the risks associated with SHS exposure39 (Fischer, 2015).

4.2. SHS-protective behaviour

Three out of four participants (76.2%) agreed that they would avoid SHS exposure by staying away from places where smoking was prevalent. These findings are concordant with those of Nuzooa (2015) and Chan Sun and Frédéric (2020). Other studies showed that despite good knowledge on the harms of SHS among educated persons, appropriate behaviour to protect themselves from SHS exposure was not adopted30 (Al-Zabadi, 2016). Nonetheless, studies among other subgroups, namely housewives, adolescent girls or the general population, appropriate behaviours towards exposure to SHS were demonstrated despite a low level of knowledge on the subject28 (Richardson, 2013; Schwartz, 2014; Ismail, 2015). In the current study, the majority of respondents would object if someone travelling with them in a car started to smoke (M = 1.79), and that they would not allow visitors to smoke in their houses (M = 1.60). Nonetheless, respondents did not mind having a chat with their family members while they were smoking (M = 2.15). The latter finding nonetheless raises concern and needs to be explored further.

4.3. SHS-related knowledge and SHS-protective behaviour

Correlation analysis showed a significant positive relationship between knowledge and behaviour, while hierarchical regression analysis established that knowledge was a significant determinant of behaviour. For this study, knowledge brought out a 16% variance in behaviour. This is in line with the study carried out among primary school teachers in Mauritius, where the same relationship between knowledge and behaviour was revealed (Chan Sun and Frédéric, 2020). The same significant correlation between SHS-related knowledge and SHS-protective behaviour was demonstrated in the United States (Kurtz, 2003), Taiwan (Lin, 2010); Great Britain (Glen, 2012). The recurrent possible explanation in these studies is that self-efficacy is a predictor of behaviour as explained by the social cognitive theory (Bandura, 1986). While knowledge has been acknowledged as being needed to bring about self-protective behaviour (Bandura, 1990); no such link was established in some studies in developing countries, namely Jordan (Gharaibeh et al., 2011) and Malaysia (Suriani et al., 2017), and the low-income country Palestine (Al-Zabadi, 2016). The relationship between knowledge and behaviour related to SHS which has not been thoroughly investigated (Evans, 2012) is debatable. Despite the uncertain relationship between knowledge and behaviour, issues regarding knowledge mobilization in behaviour change should be addressed to improve the uptake of this knowledge in practice (Belanger-Gravel, 2019). By all means, without any knowledge about the deleterious effects of SHS being imparted, no protective behaviour can be expected.

4.4. Study limitations and strengths

This online survey has a limitation concerning participants who do not have access to information technology. It can also be considered that the Slovin's formula which was used in this study lacks mathematical rigor (Ryan, 2013). Its use which was driven by the local context where the population proportion was believed to be around 0.5, is recommended by Tejada and Punzalan (2012). The limitation of cross-sectional data in establishing causality links is acknowledged. Nonetheless, Thelle and Laake (2015) stated that cross-sectional analysis of knowledge by demographic variables allow for the examination of a large number of variables while Di Girolamo and Mans (2019) put forward that the results are valid only at a specific point in time (Di Girolamo and Mans, 2019). Therefore, any apparent causal relationships in our findings only apply? applies? to the sample used at the time of this study.

Data analysis for the current survey revealed that the questionnaire had a Cronbach's Alpha value of 0.89 for knowledge and 0.79 for behaviour. In line with Malhotra (2019) and Tavakol and Dennick (2011) who state that Cronbach Alpha coefficients should be at least 0.6 and should not exceed 0.95, the internal consistency of our questionnaire has been demonstrated53 (Tavakol and Dennick, 2011). The carefully planned study design with the use of a validated questionnaire represents the strengths of this study, contributing to its internal validity. The current survey among the general public in Mauritius has replicated the results of the previous surveys on the specific groups of university students and primary school teachers respectively, demonstrating its internal and external validity. Replication of results in independent samples supports both the internal validity and the generalizability of the original finding (Kukull and Ganguli, 2012). Whether or not our findings can be extrapolated to other countries or populations will be, according to Kukull and Ganguli (2012); a matter of judgement (Kukull and Ganguli, 2012).

To conclude, the use of the SHS knowledge/behaviour questionnaire validated by this survey is recommended for the assessment of knowledge/behaviour before and after health education campaigns.

5. Author statements

Ethical clearance was obtained from the Department of Medicine Research Ethics Committee of the University of Mauritius.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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