ENVIRONMENTAL AND FINANCIAL MOTIVES IN THE AVOIDANCE OF BOTTLED WATER: A STUDY AMONG CIVIL SERVANTS OF OYO STATE, NIGERIA

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ABSTRACT

Bottle water consumption may be unavoidable for optimum human health in developing rather than developed countries because of the former's poorer provision of tap water. Yet, bottle water consumption is one of the causes of plastic pollution with huge negative environmental impact which is even more evident in developing countries. This makes the avoidance of bottled water to be more expedient in this context. Hence, this study was designed to determine how perceived environmental detriment of plastics and financial wherewithal predict avoidance of bottled water among civil servants of Oyo state, Nigeria. Primary data collection featured the self-administration of a structured questionnaire among 432 randomly sampled respondents. One-way ANOVA and Independent samples *t* test were used to assess significant differences in means across sub-groups of socio-demographic variables, with regard to avoidance of bottled water. Stepwise, multiple linear regression (using standardized ß, *r* and R^2 change) were used to determine motivators of avoidance of bottled water. Results indicate that sex, age and marital status have no significant effect on respondent's avoidance of bottled water ($p > 0.05$). Perceived environmental detriment of plastics was a better predictor (standardized ß = .275, R^2 change = .078, *r* = .280, $p < 0.001$) when compared to financial wherewithal (standardized ß = -.097, R^2 change = .009, *r* = -.043, $p < 0.05$). The two variables afforded multiple relationship of 29.6% and explained 8.8% of the variation in avoidance of bottled water (multiple R = 0.296; R^2 = 0.088, $p < 0.001$).Sex, age and marital status are irrelevant factors in bottled water avoidance. The stronger the perceived environmental detriment of plastics, the weaker the financial wherewithal, the greater the avoidance of bottled water. Environmental orientation is a phenomenon that should be considered in efforts to reduce bottle water consumption while targeting individuals with greater financial endowment.

Keywords: Plastic pollution; bottled water; financial capacity; civil servants; environmentalism.

Introduction

Bottled water consumption has increased not only in developed but developing countries like Nigeria (Vásquez, 2017; Wardrop *et al*., 2017). Nationally representative survey indicates that 1% of urban Nigerian households rely on bottled water as their main source of drinking water. This proportion increased to 1.6% when the southwestern region alone is considered (NBS and UNICEF, 2017). This figure makes bottled water consumption to appear low because it did not capture consumption of average Nigerians when they are outside of their residence. For instance, in 2013, the former Director General of the Nigerian National

Agency for Food and Drug Administration and Control (NAFDAC), Dr. Paul Orhii was quoted to have estimated that 100 million bottles of water are consumed on a daily basis in Nigeria (Obuh and Uzor, 2013).

Bottled water consumption is ordinarily associated with modern, prosperous good life which increases with increasing urbanization. There is a kind of 'hype' that bottled water attracts (NRDC, 1999; Doria, 2006; Parag and Roberts, 2009). Basic economics dictates that the consumption of bottled water will respond to financial wherewithal especially where alternative, typically cheaper sources of drinking water are available. Owing to adequate availability of safe water sources, consumption of bottled water in developed countries is generally needless. However, the situation in developing countries like Nigeria may warrant this reliance for access to safe drinking water. In sub-Saharan Africa, the proportion of the population using safely managed drinking water increased only from 18% to 27% between 2000 to 2017. In contrast, this proportion increased from 90% to 95% in Europe and Northern America within the same period (UNICEF and WHO, 2019).The consumption of bottled water has deep and extensive negative environmental implications(Ferrier, 2001; Prasetiawan *et al*., 2017, Díez *et al*., 2018) making it necessary to avoid same for the sake of environmental well-being in developing countries. The use of bottled water is a huge element of plastic pollution. It is challenging for solid waste disposal and management in limited-resource communities (Moghadam *et al*., 2009; Quartey *et al*., 2015). Prevalent use of bottled water promotes plastic littering that blocks drainages and causes flooding (Stoler, 2012). Perhaps, the greatest negative environmental impact of plastic use is its pollution of the marine environment. MacArthur *et al*. (2016)

reckoned that 150 million tons of plastic wastes are in water bodies. Concerns have shown that oceans will become the habitat of more plastics rather than fish in the near future if current plastic use is left unchecked (Carlini and Kleine, 2018; Sidhu and Desa, 2018). Bottled water consumption and other demands for plastic are underlying motivations of the mantra for the 2018 World Environment Day— '*Beat Plastic Pollution*'. Certainly, the avoidance of bottled water is apt on the grounds of environmentalism irrespective of financial wherewithal. Yet, empirical data attesting same are seemingly non-existent in sub-populations of developing countries especially Nigeria. Hence, this study was designed to examine environmental and financial motivators in the avoidance of bottled water. More specifically, the predictive roles of perceived environmental detriment of plastics and financial wherewithal with regard to avoidance of bottled water were determined. In addition, the effects of sex, age and marital status on avoidance of bottled water were also identified among civil servants of Oyo state, Nigeria.

Methodology

Research design/ Study population

The research design was cross-sectional survey targeted at core civil servants of Oyo State, Nigeria. This category of civil servants is the staff of Oyo State ministries in Oyo State secretariat. The civil service is a miniature version of the bigger society. Hence, information obtained from them is akin to what can be obtained from the society generally. Oyo State is in South Western Nigeria, the major region of the Yoruba speaking people. The region is made up of six States including Oyo State.

Sampling procedure

Data gotten from the Ministry of Finance show that the target population is 4,786. This total population, confidence level of 95% and confidence interval of 4.5 yielded the required sample size of 432. The core ministries of Oyo State are 19 (Oyo State Government, 2019). These served as sampling units and ten were randomly chosen from them. Proportional representation was respected in the random selection of samples from sampling units. The population of the ten sampling units is 3,670. Unit's population was divided by 3,670 and multiplied by 432 to determine the number of respondents that were selected from units. Hence, in the Ministries of Information, Culture and Tourism; Justice; as well as Trade, Industry, Investment and Co-operatives; 22, 18 and 32 respondents were selected, respectively. In the Ministries of Agriculture, Natural Resources and Rural Development; Education, Science and Technology; Environment and Water Resources as well as Health; 89, 105, 28 and 48 respondents were selected, respectively. Further, in the Ministries of Lands, Housing and Urban Development; Local Government and Chieftaincy Affairs as well as Youth and Sports; 68, 14 and 8 respondents were selected, respectively.

Instrument of data collection

Structured, self-administered questionnaire was used in primary data collection, between September and October, 2019. Response rate was 100% because the entire copies of the study questionnaire were recovered.

Definition and measurement of variables

Perceived environmental detriment of plastics was defined as respondent's appraisal of the extent to which plastics are harmful to the environment. It was measured with a four-item author-developed Likert scale. Responses were scored 1 to 4 making total

possible score to range from 4 to 16. The higher a respondent's score, the stronger the perceived environmental detriment of plastics. The scale is internally consistent with a Cronbach's alpha score of 0.767.*Financial wherewithal* was defined as respondent's subjective evaluation of their current monetary capacity. This was assessed with an item requesting respondents to select a phrase that best suit their monetary capacity. These phrases included "not adequate, incurring debt; not adequate, without debt; adequate, without savings; and adequate, with savings". They were scored 1 to 4, increased score meant better financial wherewithal. *Avoidance of bottled water* was operationally defined as the extent of respondent's refusal to consume bottled water. It was assessed with two author-designed, intensity assessing items. Response categories were scored 1 to 3 such that increasing total score (2 to 6) implied greater avoidance of bottled water. The internal consistency of the two-item scale as assessed with Cronbach's alpha was 0.624. Sex, age and marital status were assessed nominally. Items used to assess variables are contained in table 2.

Data analyses

Percentage analysis was used to compute distributions of data. The normalcy of distributions of interval level data were examined with Kolmogorov Smirnov test.Homogeneity of variance across sub-groups of sex, age and marital status were tested with Levene's test. One-way ANOVA was used to assess the significance of differences in mean scores of avoidance of bottled water across sub-groups of age and marital status. Independent samples *t* test was used to assess this difference between sex sub-groups. Stepwise, multiple linear regression (using Multiple R and R^2) was used to determine how well perceived

environmental detriment of plastics and financial wherewithal explained avoidance of bottled water. R^2 change, standardized ß and zero-order correlation were used to assess the contribution of each predictor. Multiple R and R^2 were used to assess the combined contribution of the two independent variables. Data were analyzed with the use of Statistical Package for Social Sciences (version 22).

Results and Discussions

Socio-demographic characteristics of respondents

Female respondents were 53.7% while male respondents were 46.3%. This is indeed an impressive account of female employment in the study area generally. Respondents within the age range of 26 to 35 years were most(32.6%)represented in the study. However, the oldest, 56 to 65 age cohort were least represented(2.5%). Representation of each of all other age sub-categories were similar and approximately one-fifth of entire sample. The youthfulness of Oyo state civil service is reflected in this sample. A vast majority (58.3%) of respondents were married. Single respondents were 36.3% while the divorced constituted 3%. This mirrors the growing rate of divorce in contemporary society. Five respondents were widowed while five respondents refused to disclose their marital status. The distribution of socio-demographic characteristics of respondents is presented in Table 1.

Table 1: Distribution of socio-demographic characteristics of respondents (N = 432)

		Frequency	Percentage
Sex	Male	200	46.3
	Female	232	53.7
Age*	16-25	93	21.5
	26-35	141	32.6
	36-45	98	22.7
	46-55	89	20.6
	56-65	11	2.5
Marital status	Single	157	36.3
	Married	252	58.3
	Divorced	13	3.0
	Widowed	5	1.2
	No response	5	1.2

*The mean ±SD of age was 35.95±10.64, minimum= 20, maximum= 58.

Item analysis of measures of perceived environmental detriment of plastics, financial wherewithal and avoidance of bottled water

The distributions of items in Table 2 shows that more than 4 of 10 respondents (44.9%) agreed that the way people use plastics nowadays is dangerous to our environment. This agreement was strong among more than 3 of 10 (32.2%) respondents. This is in good agreement with the dictates of environmentalism. Incidentally, more than 4

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of 10 respondents (44.4%) disagreed that the earth would be a better place if plastics were never produced. This is fair enough considering that plastic use is beneficial in certain circumstances, such as in the production of syringes. A fifth of respondents (20.1%) strongly agreed that plastic use is a threat to human survival and up to 4 of 10 (38.7%) agreed with this statement. This is another fair indication of positive environmental attitudes in the study population. The prevalent use of plastics did not appear like a big personal issue among most respondents considering that 43.3% of them disagreed that the thought of man's use of plastics scares them. It is highly noticeable though that 35.9% of respondents agreed with this statement. The distribution of respondent's agreement with items assessing perceived environmental detriment of plastics generally suggests that there is a good measure of positive environmental attitudes on account of plastic use among respondents in the study area.

Percentage distributions of items in Table 2 further indicates that the financial wherewithal of more than 3 of 10 respondents (33.3%) is inadequate but without debt. This wherewithal is inadequate leading to debt incurrence among almost a tenth (8.8%) of respondents. Financial wherewithal is adequate among 29.4% of respondents who are also not saving while 22.9% are able to save money. This distribution depicts a nearly bipolar distribution of respondents in terms of economic well-being. This quite justifies the civil service as a microcosm of society considering that economic well-being typically ranges from high to low in the larger society.

Most respondents (51.6%) sometimes go about with their drinking water or thermal bottle to prevent them from having to consume bottled water. Another 17.6% of respondents always engage in this practice while 29.9% never do so. Further distributions show that almost 6 of 10 respondents (57.9%) never avoid drinking bottled water, 31.3% sometimes do so while 9.7% always avoid drinking same. Although the current study centers on avoidance rather than consumption of bottled water perse, relevant consumption studies are fairly comparable with rate of avoidance reported here. In their study among students, lecturers and administrative staff of the University of Basque Country, Spain, Díez *et al*. (2018) found that 50.2% of respondents did not drink any bottled water in the week before the survey. Saylor *et al*., (2011)also found that 38% of their respondents did not drink bottled water in the week before the survey of 677 staff and students of Purdue University, Indiana, United States. Avoidance of bottled water is evident but requires promotion among respondents in the study area.

Table 2: Analysis of items used in the assessment of perceived environmental detriment of plastics, financial wherewithal and avoidance of bottled water

	Perceived environmental detriment of plastics					
Items*	Strongly agreeFrequency (%)	AgreeFrequency (%)	Disagree Frequency (%)	Strongly DisagreeFrequency (%)	No responseFrequency (%)	Mean±SD
The way people use plastics	139 (32.2)	194 (44.9)	74 (17.1)	25 (5.8)	0 (0)	3.03±0.85

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nowadays is dangerous to our environment						
The earth would be a better place if plastics were never produced	60 (13.9)	132 (30.6)	192 (44.4)	48 (11.1)	0 (0)	2.47±0.87
Plastic-use is a threat to human survival	87(20.1)	167 (38.7)	119 (27.5)	58 (13.4)	1 (0.2)	2.66±0.95
The thought of man's use of plastics scares me	37 (8.6)	155 (35.9)	187 (43.3)	46 (10.6)	7 (1.6)	2.43±0.80

Financial wherewithal						
Item**	Inadequate, incurring debtFrequency (%)	Inadequate, without debt Frequency (%)	Adequate, without saving Frequency (%)	Adequate with savings Frequency (%)	No response Frequency (%)	Mean±SD
Financial capacity	38 (8.8)	144 (33.3)	127 (29.4)	99 (22.9)	24 (5.6)	2.70±0.94

Avoidance of bottled water					
Items***	Never Frequency (%)	Sometimes Frequency (%)	Always Frequency (%)	No response Frequency (%)	Mean±SD
Going about with drinking/thermal bottle of water to avoid bottled water or sachet water	129 (29.9)	223 (51.6)	76 (17.6)	4 (0.9)	1.88±0.68
Avoiding bottled drinking water	250 (57.9)	135 (31.3)	42 (9.7)	5 (1.2)	1.51±0.67

*Respondents were asked: To what extent do you agree or disagree with the following? **Please describe your current financial capacity ***How often do you engage in the following?

Sex, age, marital status and avoidance of bottled water

The mean score of avoidance of bottled water among males (3.40±0.08) and females (3.380±0.073) are very close. The outcome of Levene's test indicates homogeneity of variance between the two sub-groups (*p*> 0.05). The result also shows that there is no significant difference in means between the two sub-groups (*p*> 0.05).Hence, sex has no effect on avoidance of Table water. Díez *et al*. (2018) similarly found that though more men (54.4%) than women (48.5%) did not drink any bottle water in the week before their survey, sex was not a significant factor affecting bottled water consumption in Spain. In a similar fashion, Ghebregiorgis and Mehreteab (2018) found that sex was not a significant factor determining bottled water buying behaviour in Eritrea. Johnstone and Serret (2012) also found sex to be an insignificant determinant of bottle water consumption in their study among 10,000 households of ten high-income countries. However, Saylor *et al*. (2011) found that women were significantly more likely to consume more bottled water than men. Current study affirms the insignificance of sex on bottle water use.

The means on Table 3 shows that increasing age ordinarily affords greater avoidance of bottled water. The youngest age sub-group, 16-25 years, recorded the lowest mean score (3.240±0.935) while the oldest age sub-group recorded the highest mean (3.81±1.53). This ordinary suggests that age predisposes to greater avoidance of table water, vindicating age as an asset in the development of pro-environmental behaviour. However, there are no significant differences in the mean score of avoidance of bottled water across sub-groups of age (*p*> 0.05). Hence, age has no significant effect on avoidance of bottled water. Age was also reported to be insignificant in bottled water buying behaviour in Eritrea (Ghebregiorgis and Mehreteab, 2018). Similarly, Johnstone and Serret (2012) reported that age was an insignificant determinant of bottle water consumption.

Avoidance of bottled water was best among widowed respondents (4.40±1.51) and was better among the divorced (3.69±1.54). Single respondents avoided bottled water in the least (3.220±.977) while married respondents were fairly better than them (3.46±1.14). The result of one-way ANOVA shows that there are significant differences in means across sub-groups of marital status (*p*< 0.05). However, the result of Levene's test threatens the validity of this significant difference because it did not indicate homogeneity of variances across sub-groups of marital status (*p*< 0.05). Therefore, it cannot be affirmed that marital status has significant effect on avoidance of table water. The summary of results obtained in the analysis of the effects of sex, age and marital status on avoidance of bottled water is presented in table 3.

Table 3: Effects of sex, age and marital status on avoidance of bottled water

Socio-demo-graphic variables	Sub-groups	Mean ±SD	Levene's test for homogeneity of variances		ANOVA		t test	
			Levene's statistic	*p* value	F statistic	*p* value	t Statistic	*p* value
Sex	Males	3.40±.080	0.006	0.941	-	-	0.107	0.915

Journal of Forestry Research and Management. Vol. 17(3).29-39; 2020, ISSN 0189-8418

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	Females	3.38±.073						
Age	16-25	3.24±.935	5.107	0.001	0.900	0.464	-	-
	26-35	3.40±1.16						
	36-45	3.43±.978						
	46-55	3.44±1.25						
	56-65	3.81±1.53						
Marital status	Single	3.22±.977	5.174	0.002	3.251	0.022	-	-
	Married	3.46±1.14						
	Divorced	3.69±1.54						
	Widowed	4.40±1.51						

Perceived environmental detriment of plastics, financial wherewithal and avoidance of bottled water among respondents

The results of multiple linear regression on Table 4 indicates that perceived environmental detriment of plastics is a significant predictor of avoidance of bottled water (standardized ß = 0.275, $p<0.001$). For every 0.275 increase in perceived environmental detriment of plastics, there is 1 unit increase in avoidance of table water. Further results show that perceived environmental detriment of plastics yielded R^2 change of 0.078 ($p<0.001$) for avoidance of table water. This implies that 7.8% of the variance in avoidance of bottled water is on the account of perceived environmental detriment of plastics. Result in Table 4 also shows that there is significant and positive relationship ($r = 0.280$, $p<0.001$) between perceived environmental detriment of plastics and avoidance of table water. Hence, perceived environmental detriment of plasticsis a significant predictor/correlate, and gives a fair account of avoidance of table water. In agreement with this finding, Saylor *et al.*, (2011) found significantly negative but weak relationship between perception of the environmental damage caused by bottled water and bottle water consumption (r = -0.117, $p< 0.01$). Concern for solid waste was reported to have significantly negative effect on bottled water consumption (Johnstone and Serret, 2012).

The results on table 4 also indicates that financial wherewithal is a significant predictor of avoidance of bottled water (standardized ß = -0.097, $p < 0.05$). For every 0.097 increase in financial wherewithal, there is 1 unit decrease in avoidance of table water. Results also shows that financial wherewithal yielded R^2 change of .009 ($p<0.05$) for avoidance of table water. The amount of variance in avoidance of bottled water that is explained by financial wherewithal is 0.09%. Table 4 also shows that there is a significant, negative and very weak relationship (r = -0.043, $p<0.05$) between financial wherewithal and avoidance of table water. Hence, financial wherewithal is a significant predictor/correlate, but provides a weak explanation of avoidance of table water. Hence, reduced financial wherewithal is bound to increase avoidance of bottled water. This is in support of the findings of Johnstone and Serret (2012). In the report of a macro study involving 10,000 households in 10 countries (Australia, Canada, Czech Republic, France, Italy, Korea, Mexico, the Netherlands, Norway and Sweden), Johnstone and Serret (2012) asserted that income is positively and significantly related to drinking bottled water.

The analysis of avoidance of bottled water and perceived environmental detriment of plastics as well as financial wherewithal yielded a multiple R of 0.296 ($p<0.001$) and R^2 of 0.088 ($p<0.001$). This indicates that the extent to which this two-variable model relates with avoidance of bottle water is 29.6% while only 8.8% of the variation in this dependent variable is accounted for by using this model. This model provides significant but poor explanation of avoidance of table water. Perceived environmental detriment of plastics is a better predictor of avoidance of table water when compared with financial wherewithal.

Table 4: Result of step-wise multiple regression analysis showing a model of significant predictors of avoidance of bottled water

Model summary		Change statistics						
Multiple R	R^2	Predictors	R^2 Change	Standardized β	F statistic	*p* value (F change)	Zero-order correlation	*p* value (Zero-order correlation)
0.296	0.088	Perceived environmental detriment of plastics	0.078	0.275	33.164	0.000	0.280	0.000
		Financial wherewithal	0.009	-0.097	4.010	0.046	-0.043	0.016

Dependent variable: Avoidance of bottled water

Conclusions

Environmental and financial motivators are significant in the avoidance of bottled water. However, socio-demographic factors including sex, age and marital status are not significant influencers of this avoidance. Pro-environmental attitudes towards plastic use and reduced financial capacity significantly predisposes individuals to avoiding bottled water. Governmental and non-governmental actors interested in discouraging the use of bottled water should reiterate the essence of environmentalism and focus on wealthier sub-groups of the population.

References

Carlini, G. and Kleine, K. (2018). Advancing the International Regulation of Plastic Pollution Beyond the United Nations Environment Assembly Resolution on Marine Litter and Microplastics. *Review of European, Comparative & International Environmental Law*, 27(3): 234-244.

Díez, J. R., Antigüedad, I., Agirre, E. and Rico, A. (2018). Perceptions and Consumption of Bottled Water at the University of the Basque Country: Showcasing Tap Water as the Real Alternative Towards a Water-sustainable University. *Sustainability*, 10: 3431.

Doria, M. F. (2006). Bottled water versus tap water: understanding consumers' preferences. *Journal of water and health*, 4(2): 271-276.

Ferrier, C. (2001). Bottled Water: Understanding a Social Phenomenon. *AMBIO: A Journal of the Human Environment,* 30(2): 118–119.

Ghebregiorgis, F. and Mehreteab, H. T. (2018). The relationship between Demographic and Psychological Factors and Bottled Water Buying Behavior in

Eritrea.*Issues in Business Management and Economics*,6(2): 39-46.

Johnstone, N. and Serret, Y. (2012). Determinants of Bottled and Purified Water Consumption: Results Based on an OECD Survey. *Water Policy*, 14(4): 668-679.

MacArthur, D. E., Waughray, D. andStuchtey, M. R. (2016, January). The New Plastics Economy, Rethinking the Future of Plastics. In *World Economic Forum*. Accessed18/01/20 from https://www.ellenmacarthurfoundation.org/publications/thenew-plastics-economy rethinking-the-future-of-plastics

Moghadam, M. A., Mokhtarani, N. andMokhtarani, B. (2009). Municipal Solid Waste Management in Rasht City, Iran. *Waste Management*, 29(1): 485-489.

National Bureau of Statistics (NBS) and United Nations Children's Fund (UNICEF). (2017) Multiple Indicator Cluster Survey 2016-17, Survey Findings Report. Abuja, Nigeria: National Bureau of Statistics and United Nations Children's Fund.

Natural Resources Defense Council, Inc. (1999) Bottled Water. Pure Drink or Pure Hype? New York: NRDC.

Obuh, P.andUzor, N. (2013).Daily Water Consumption in Nigeria hits N8bn. Vanguard Newspaper. Accessed 31st May, 2020 at https://www.vanguardngr.com/2013/10/daily-water-consumption-nigeria-hits-n8bn/

Oyo State Government (2019). Ministries. Accessed 10th October 2019 at https://oyostate.gov.ng/ministries-departments-and-agencies/

Parag, Y. and Roberts, J. T. (2009). A Battle Against the Bottles: Building, Claiming, and Regaining Tap-water Trustworthiness. *Society and Natural Resources*, 22(7): 625-636.

Prasetiawan, T., Nastiti, A. andMuntalif, B. S. (2017). 'Bad' Piped Water and Other Perceptual Drivers of Bottled Water Consumption in Indonesia. *Wiley Interdisciplinary Reviews: Water*, 4(4): e1219.Doi: 10.1002/wat2.1219\

Quartey, E. T., Tosefa, H., Danquah, K. A. B. andObrsalova, I. (2015). Theoretical Framework for Plastic Waste Management in Ghana Through Extended Producer Responsibility: Case of Sachet Water Waste. *International Journal of Environmental Research and Public Health*, 12(8): 9907-9919.

Saylor, A., Prokopy, L. S. andAmberg, S. (2011). What's Wrong with the Tap? Examining Perceptions of Tap Water and Bottled Water at Purdue University. *Environmental Management*, 48(3): 588-601.

Sidhu, B. K. andDesa, B. H. (2018). Plastics Pollution: A New Common Concern of Humankind? *Environmental Policy and Law*, *48*(5), 252-255.

Stoler, J. (2012). Improved but Unsustainable: Accounting for Sachet Water in Post-2015 Goals for Global Safe Water. *Tropical Medicine & International Health*, 17(12): 1506-1508.

UNICEF and WHO (2019). Progress on Household Drinking Water, Sanitation and Hygiene 2000-2017. Special Focus on Inequalities. New York: United Nations Children's Fund (UNICEF) and World Health Organization. Accessed 31st May, 2020 at https://www.who.int/water_sanitation_health/publications/jmp-2019-full-report.pdf?ua=1

Vásquez, W. F. (2017). Understanding Bottled Water Consumption in a High-poverty Context: Empirical Evidence from a Small Town in Guatemala. *International Journal of Consumer Studies*, 41(2): 199-206.

Wardrop, N. A., Dzodzomenyo, M., Aryeetey, G., Hill, A. G., Bain, R. E. and Wright, J. (2017). Estimation of Packaged Water Consumption and Associated Plastic Waste Production from Household Budget Surveys. *Environmental Research Letters*, 12(7): 074029.