

Consumers' Perceptions on Drinking Water Quality and the Presence of Fluoride in Selected Food Establishments in Dasmariñas, Cavite

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Abstract - Due of the substantiality among 4 out of 10 Filipino adults, 71.1% of which are students (Desnacido J., et. al., 2019) eating off household premises, owing to the convenience and accessibility brought by the small food establishments, the significance of an adequate quality of drinking water is a vital consideration for public health in Dasmariñas, Cavite. This locale in 2007 was beset by an immoderate concentration of fluoride in their drinking water due to the increase of dental caries, which led to hosting of dental fluorosis within its residents. Results from the 222 respondents revealed that the consumers observed a clear (72%), odorless (68%), and neither distasteful (65.3%) service drinking water from the selected food establishments. However, there is still a significant majority of consumers (56.7%) that are worried about the drinking water quality served in the food establishments. 6 samples were analyzed using ion chromatography with chemical suppression of eluent conductivity. The employed method detected fluoride levels of <0.2 ppm for all the samples, indicating that concentrations were well below the permissible limit of 1.50 ppm set by the Department of Health. This furnishes reassurance that clear water, safety and sanitation are materially practiced and observed by the small food establishments. As this study mainly focused on the analysis of mineral water and scrutinized inadequate findings within a wide population of small food establishments, this sets a gap for future researchers to reinforce a more significantly profound study for a more accurate statement.

Keywords - Water Quality, Fluoride, Drinking Water, Small Food Establishments

Introduction

Carinderias are small local food establishments, customarily attached and simply bridges through a house built across the Philippines. The popularity of these food establishments has been conventionally favored as it put forward affordable food meals and usually provide free of charge, indefinite drinking water — which became the basis of skeptical thought of “does these cariderias observe clean water serving?”.

As 40% Filipinos from a 4/10 ratio (Desnacido J., et. al., 2019) are consuming non-home cooked meals, the object of this investigation is brought about to assess whether the well-loved carinderias promote maintenance within the United Nation’s Sustainable Development Goals (SDGs), namely “Good Health and Well-being” and “Clean Water and Sanitation.” This is to impose to wide range population, scaled down to Dasmariñas, Cavite residents a long-term vision of reducing vulnerability of individuals and families; ensuring ecological integrity, clean and healthy environment; and maintaining safety and resilience, associated to Ambisyon Natin 2040.

Republic Act No. 9275 (Philippine Clean Water Act of 2004), Presidential Decree No. 198 (Provincial Water Utilities Act of 1973) and Presidential Decree No. 956 (Code on Sanitation of the Philippines) materially aids the guidance on aiming the purpose of this research. These legislations advocate for ameliorated country’s water source, directing standard water quality and distribution system through environmental strategies, development of water quality management programs, and the participation and self-regulation of the public’s management and efficient water-use for the domestic, agricultural, and other use of residents and lands within the boundaries of districts. These constitutions further observe the provision of sanitation, wastewater management, and the drinking water quality standards for food establishments.

This research is at mostly focused on analyzing the presence of fluoride within the drinking water of selected 6 fitting food establishments which have common component of mineral water and gallon being their source of service water, off 22 inspected other carinderias that have disparate variety of means. Accordingly, only the observations and perceptions of dine-in consumers to the water quality are taken to be processed. The factors that may be brought about by the sanitation management of serving and consumption utensils such as the cups, containers or gallons utilized, as well as the succeeding procedures undertaken before the water reaches the locale were out of the researchers’ control as the study is solely centered to the water quality being served itself by the carinderias.

Materials and Methods

Research Design

A joint experimental and descriptive research design was traced upon the proceedings of this study's data gathering operation. Survey instrument and Ion Chromatography testing encompassed the accomplishment of the approach. Generating both designs would assist the study in providing detailed accuracy of statements, simultaneously elucidating cause and effect relationships of the tackled topic (Bhattacharya, A. & Chetty, P., 2020).

Research Locale

In 2007, the drinking water in the province of Cavite had historically accommodated a high content of fluoride, almost raised over the prescribed maximum concentration of 1.5 ppm by the Department of Health. This increase of fluoride content in drinking water of Cavite sourced a case of dental fluorosis, affecting the dental health of the locals (Canlas, et. al., 2008). These are the grounds for the researchers to take barangays Sta. Fe, Congressional Avenue and Buro I, Congressional Avenue of Dasmariñas, Cavite into account for the materialization of the methodology. These adjacent barangays are congested with carinderias that are mostly located nearby educational and industrial establishments and are commonly operating from breakfast to dinner time, at most 6 days a week.

Sampling Design

Within the framework of this study, the completion of the data collected is expedited through a simple random sampling technique that is utilized when the entire population is accessible and when the researchers are interested in the generalized population in place of subpopulations (Brown, 2010; Elfil & Negita, 2017). Through this approach, the minimum target sample size corresponding to 70-80% from the target population had an equal or nonzero probability of being included in the sample. According to Turner (2020), the employment of the method may lead to a greater percentage of specific subpopulations in the sample, contrast to its actual proportion in the population — which suits to take advantage of obtaining the observations and perceptions of the general population, placing less emphasis on the representation of the population composition of specific groups within the locale.

Instrumentation

A 20-item survey questionnaire, comprising of 5 demographical questions, 10 querying the customers' observation of the water quality, and 5 items adapted from Mousumi, S. (2022) to ask their perceptions to the same topic were presented as instruments for accumulating and congregating descriptive data that went through scrupulous validation process, meticulously reviewed by licensed and professional University professors, expertise from Chemistry, Health Science, Filipino, and English. Correspondingly, Ion Chromatography with Chemical Suppression of Eluent Conductivity test was set about for the analyzation of the 6 samples taken from the selected small food establishments.

Data Gathering Procedure

Subsequent to finalizing the formulation of instruments by the first week of November and the examination process with a criterion of 22 carinderias in the two adjacent barangays of Sta. Fe and Buro I during the 13th of the same month, the methodology took place through in person dispensing of the survey questionnaires to 222 carinderia customers of the selected 6 fitting food establishments within the dates of 14th, 15th, 23rd, and 24th days of November. At the same as the first day of the procedure (November 14), the water samples respectively acquired from the selected small food establishments were concomitantly sent to the Aqualab Analytical Services, Quezon City main facility to undergo the aforementioned water testing conducted through the Incorporation of Global Elixir Water Laboratory Center, which took 10 days before results were tabulated.

Statistical Treatment

A statistical approach of frequency distribution aided the study's arrangement of apportionment within customers' judgments of drinking water quality and the presence of fluoride in chosen food establishments. Having this frequency tabular representation of the findings, the conventional view of the data would be attainable and a picture of the distribution in measurement scale thus present (Manikandan, S., 2011).

Results

Demographic Profile

Eatery	Frequency	Percent
Food Establishment #1	32	14.4
Food Establishment #12	38	17.1
Food Establishment #15	46	20.7
Food Establishment #16	27	12.2
Food Establishment #17	18	8.1
Food Establishment #18	61	27.5
Total	222	100.0

Table 1: Tabulation portrayal of demographics based on small food establishments

Carinderia. The determined 6 out of 22 fitting small food establishments undertook the survey where 222 respondents were accumulated — 61 (27.5%) of which sprang from carinderia No. 18, 46 (20.7%) from No. 15, 38 (17.1%) from No. 12, 32 (14.4%) from No. 1, 27 (12.2%) from No. 16, and 18 (8.1%) customers originated from carinderia No. 17.

Sex	Frequency	Percent
Female	78	35.1
Male	144	64.9
Total	222	100.0

Table 2: Tabulation portrayal of demographics based on sex

Sex. 144 identified male gendered respondents comprises 64.9% of the total population of 222 carinderia dine-in customers within the two adjacent barangays of Sta. Fe and Buroil II. While 78 (35.1%) are female gendered respondents.

Age	Frequency	Percent
Below 20	80	36.0
21-25	70	31.5
26 and above	72	32.4
Total	222	100.0

Table 3: Tabulation portrayal of demographics based on age

Age. Out of the 222 populaces of dine-in customers from the 6 selected carinderias, 80 (36.0%) are aged under the legal age of 20, 72 (32.4%) are 26 years old and above, and 70 are in their 21-25, filling the remaining 31.5%.

Educational attainment	Frequency	Percent
Basic Education	99	44.6
Higher Education	120	54.1
Non-Formal/ Alternative Education	3	1.4
Total	222	100.0

Table 4: Tabulation portrayal of demographics based on educational attainment

Educational Attainment. 120 of the 222 respondents completed and accomplished a higher education, containing 54.1% of the 46.0% comprising 99 (44.6%) basic education achievers and 3 (1.4%) fulfilled a non-formal/alternative education.

Estimated expense per meal	Frequency	Percent
Less than Php100	161	72.5
More than Php100	61	27.5
Total	222	100.0

Table 5: Tabulation portrayal of demographics based on estimated expense per meal

Estimated Expense per Meal. The budget of 161 (72.5%) dine-in customers of the determined 6 carinderias rate less than Php 100, and the other 61 (27.5%) respondents have more than Php 100 as expense for meals in food establishments.

Frequency of dining	Frequency	Percent
Just Once	15	6.8
Sometimes	106	47.7
Often	65	29.3
Always	36	16.2

Total	222	100.0
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Table 6: Tabulation portrayal of demographics based on dining

Frequency of Dining. From the population of 222 food establishment consumers, 106 (47.7%) sample size occasionally dine in the carinderias. While 65 (29.3%) are more often, 36 (16.2%) always dine-in, and 15 (6.8%) ate once only.

Statement		Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
I have seen the sources of the served drinking water.	Frequency	44	61	33	51	33
	Percent	19.8	27.5	14.9	23	14.9
It is tap water.	Frequency	68	79	46	23	6
	Percent	30.6	35.6	20.7	10.4	2.7
It is from a water gallon.	Frequency	9	23	69	78	43
	Percent	4.1	10.4	31.1	35.1	19.4
The water gallon is clean.	Frequency	9	12	68	79	54
	Percent	4.1	5.4	30.6	35.6	24.3
The up they used in clean.	Frequency	7	10	46	96	63
	Percent	3.2	4.5	20.7	43.2	28.4
The drinking water is clear.	Frequency	6	9	47	92	68
	Percent	2.7	4.1	21.2	41.4	30.6
The drinking water is odorless.	Frequency	10	12	49	83	68
	Percent	4.5	5.4	22.1	37.4	30.6
The drinking water does not have an unusual taste.	Frequency	10	14	53	83	62
	Percent	4.5	6.3	23.9	37.4	27.9
The drinking water is warm.	Frequency	41	73	53	39	16
	Percent	18.5	32.9	23.9	17.6	7.2
The drinking water is cold.	Frequency	14	12	31	83	82
	Percent	6.3	5.4	14	37.4	36.9

Table 7: Tabulation portrayal of respondents' observation

Observation on the Served Drinking Water. 222 dine-in carindera customers undertook a 10-item questionnaire based on their observations of the service drinking water in a specified food establishment. The bulk of respondents agreed and conceded that the observed water is out of disquieted quality — 35.6% or 79 of the populaces accorded well in acknowledging the cleanliness of the gallons and 43.2% (96) of the cup or container used from each carindera, where the water is moreover discerned by majority of the customers to be odorless and neither distasteful (83 or 37.4% agreed).

Statement		Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
I worry about the quality of my drinking water.	Frequency	25	25	46	54	72
	Percent	11.3	11.3	20.7	24.3	32.4
I worry about the contamination of my drinking water.	Frequency	24	25	51	64	58
	Percent	10.8	11.3	23	28.8	26.1
I worry about the harmful chemicals of my drinking water.	Frequency	29	34	34	69	56
	Percent	13.1	15.3	15.3	31.1	25.2
My water is a health risk.	Frequency	41	46	47	38	50
	Percent	18.5	20.7	21.2	17.1	22.5
The food establishment owners can manage the quality of their drinking water.	Frequency	12	22	54	63	71
	Percent	5.4	9.9	24.3	28.4	32

Table 8: Tabulation portrayal of respondents' perception

Perception on the Served Drinking Water. The discernment of Dasmariñas, Cavite carindera customers on the quality of service drinking water in the determined 6 small food establishments vary as 20.7 % to 23% with a frequency of 46 to 51 of the 222 respondents relatively worry to some degree concerning the drinking water they consume and the feasible contaminants enthralled within. But 69 to 72 customers, which is 31.1% to 32.4% agreed upon the uneasiness brought by the concerns of quality, contaminants, and chemicals within the drinking water. While 71 (32%) conceded that those selected carinderias practices proper management of the water quality they serve.

Experimental Water Test

Sampling Location	Sampling Address	Time Collected	Results
Food Establishment #1	Brgy. Sta. Fe Dasmariñas	1:01PM	<0.2 ppm
Food Establishment #12	Brgy. Sta. Fe Dasmariñas	12:35PM	<0.2 ppm
Food Establishment #15	Brgy. Buro I Dasmariñas	10:50PM	<0.2 ppm
Food Establishment #16	Brgy. Sta. Fe Dasmariñas	12:48PM	<0.2 ppm
Food Establishment #17	Brgy. Buro I Dasmariñas	10:41AM	<0.2 ppm
Food Establishment #18	Brgy. Buro I Dasmariñas	10:59AM	<0.2 ppm

Table 9: Tabulation portrayal of Ion Chromatography test results

Ion Chromatography Test

Among the 6 drinking service water samples procured from the handpicked carinderias, all and everything prompted a <0.2 ppm of fluoride concentration after the operation conducted by the Global Elixir Water Laboratory Center Inc., Aqualab Center.

Discussions

Upon the expedition of the data collection scheme, the ensuing results as shown in Table 1 indicate a majority of respondents of which — among the selected food establishments — were surveyed from carinderia No. 18, comprising 27.5% of the total respondents. In a substantiating study by Castillo (2009), the consumer buying behaviors of Filipinos and the influence of various intercultural factors were analyzed, emphasizing that Filipino consumers are more susceptible to purchase things which are on sale and with discounts. The discerned buying pattern, noted for its distinctiveness, is a prevalent and shared phenomenon among Filipinos worldwide. Castillo (2009) rationalizes the findings of the current study as it evidences that the leading group of respondents dining in a particular carinderia in close proximity to residential areas and a school is associated with the convenience factor mentioned as influencing Filipino purchasing habits. This also suggests the carinderia's popularity as derived from word-of-mouth recommendations of neighbors and students, reflecting the social influences on consumer behavior as the aforementioned study indicates the influence of the family to be very strong in terms of purchasing power and buying behavior.

According to the 2015 census of information of Dasmariñas City, this municipality had the highest populace in Cavite, having approximately 563,508 local residents of which over 49% are males. Comparing this to the data shown in Table 2, wherein it reveals the majority of the study's respondents as males (64.9%), aids in validating the research sample's general representation of the population as it did not significantly overrepresent nor underrepresent either males or females in Dasmariñas City.

As exhibited in Table 3, the predominant age group within the consumers dining in the selected carinderias is below 20, constituting 36% of the total respondents. Data from the 2015 Cavite census reveals that over 30% of the population is aged 14 and below, and over 20% is aged 15 to 24. The aggregation of these two age cohorts would comprise over half the total population of Cavite, reflecting its association with the current study's findings in regard to the age distribution of the respondents.

The results in Table 4 bring into view 120 (54.1%) respondents that received higher education. In reference to the Philippine Business for Education (2023), a notable 82.4% of Filipinos aged 25 and over reported attaining primary education, whereas the completion rate for secondary education significantly declined to 30.5% for the said cohort in 2019. Completion rates may have increased in recent years compared to the 2019 data mentioned in the report. Higher education completion could be increasing at a different rate compared to secondary or primary levels.

Based on the results of the 2015 Family Income and Expenditure Survey, a substantial portion (41.9%) of the annual household income is spent on food, particularly among lower-income groups. For families corresponding to the lower 30% income cohort, the expenditure on food exceeds 59.7%. This is associated with the findings delineated in Table 5 wherein a significant majority of respondents (72.5%) indicated their estimated expense per meal to be less than Php 100, exhibiting consistency with the data from the national Family Income and Expenditure Survey.

In a study conducted by Tariga (2021), 41% of consumers expressed a preference for dining out once a month, while 38% reported dining out weekly. Collectively, these two groups account for 79% of respondents who consumed meals outside their homes, either on a monthly or weekly basis. Comparable findings are evident in the current study as Table 6 reveals that 47.7% of the total respondents acknowledged dining in "sometimes" at the carinderias

In view of the observations of consumers in the selected carinderias, various literature studies are identified to be associated with the results outlined in Table 7. According to Farooq et al. (2019), 116 restaurants located in Gazipur city utilize electric pumps in extracting groundwater to store them in overhead tanks before the distribution via faucets and pipelines. Thus, 67% of the food establishments exploit what is classified as tap water, wherein the probability of contamination is elevated. This supports the findings of the current study that the drinking water served in the selected carinderias have a lower possibility of being contaminated

as 35.6% of respondents expressed disagreement with the tap being the source, while 41.4% conveyed agreement with the water demonstrating clarity. In the aforementioned study, it is revealed that 73.4% of the restaurants are categorized with discernible health risks, ranging from slight to high, substantiating the overall hygienic condition of the establishments to be poor. As the majority of the drinking water samples acquired in Gazipur also contained elevated concentrations of bacteriological organisms, Farooq et al. (2019) hypothesizes that the unsanitary storage or serving of water may be associated with a significant health risk. Meanwhile, Akcalaan et al. (2022) emphasizes that the presence of various chemicals, including organic and inorganic compounds, can prompt undesirable tastes and odors in drinking water. These corresponding literatures reinforce the quality of drinking water of the selected carinderias in the current study as 43.2% of the respondents observed the cleanliness of the cups used by the food establishments, and 37.4% reported the absence of any unusual taste or odor in the drinking water.

Results disclosed in Table 8 pertaining to the perception of the consumers concerning the served drinking water in the designated carinderias are assisted by several studies. The findings in Table 8 for the statement “I worry about the quality of my drinking water” implies that a majority, 32.4% of respondents “Strongly Agree” exemplifying the respondents’ awareness that their drinking water may not be up to safe water quality standards or in their own basis of the aspects constituting clean and safe drinking water, signifying their abilities in observation and attentiveness concerning probable consequences of potentially hazardous water and the process of identifying its safety and quality. In support of these results, a community-based exploratory study by Ochoo, B., Sarkar A. & Valcour, J. (2017) in Newfoundland in Canada, contained a report with results indicating that 22 out of the 26 respondents who were not satisfied with the quality of their drinking water equally responded with “Yes” for the perceived health risk suggesting that the same respondents that were not satisfied with their drinking water’s quality were expected as the ones with heightened awareness and the capability to distinguish the health risks of unsafe water quality. Furthermore, Abbas, S., et al (2018)’s study conducted within certain areas in district Vehari, Punjab in Pakistan, consisted of results showing 90.3 % strongly agreed and agreed that drinking water quality is impactful to their health and 62.5% strongly disagree and disagree that the drinking water in their community is good. Moreover, results for the statements “I worry about the contamination of my drinking water”, “I worry about the harmful chemical of my drinking water” and “My drinking water is a health risk” denotes that most of 28.8%, 31.1% and 22.5%, respectively, “Agree” proposing that for all statements the respondents are concerned due to them paying close attention to reports in various media outlets regarding occurrences of water pollution, being aware of the detrimental health effects which increases the concern for the safety of their bodies and health, being knowledgeable in discerning the presence of contaminants and chemicals harmful to their health and the circumstance of the drinking water unintentionally containing these substances even after following standard processes in maintaining its cleanliness and safety and carrying the ability to identify and highly perceive their drinking water as perhaps a risk and a threat whether it does or does not follow standard protocol. In behalf of the first statement, Lv, J., et al (2018)’s case study in Hainan Province, China that touches on the public’s awareness on the events of water pollution and the public’s knowledge regarding the accidental events of water pollution, results demonstrated that 32.0% respondents pays close attention to reports on television and newspapers regarding water pollution events and 53.2% follow closely only in the times when they are free concluding that more than half are concerned about these events and the negative impacts that it brings to their safety and the community’s and in terms of the latter, 77.1% of respondents overall were identified to be knowledgeable with regards to water pollution accidents and probable harm it causes to human health then it is presumed that most respondents can grasp the possible damaging health impacts that water pollution accidents carry to their water supply and another study by Copeland, N., et al, (2020) in San Rafael Las Flores, Guatemala focusing on the water quality of the supplied drinking water from taps and perceptions of consumers regarding their point-of-use drinking water, results reveal that 77% of the households, most of the respondents, assumes their water as unsafe to consume leading to a conclusion that they have higher likelihood in being most concerned with possible diseases from poor quality drinking water. In the same study by Copeland, N., et al (2020) the second statement is substantiated, the results of the survey signify that the 40% of households concerned with and perceived that there were presences of contaminants in their drinking water were able to specify and mention arsenic, bacteria, sediment and chlorine as some that should be of concern. On the contrary, for the third statement, a contradicting study by Nik Hassan, N., M., N., et al. (2022) on a small island community in Malaysia regarding risk perceptions of the quality their water supply, tap water, comprised of the results for the high-risk perception statement “There are health risks associated with drinking tap water” wherein it showed negative correlation and 67.9% choosing to score from 1 to 3 revealing that most respondents disagreed displaying respondents’ disbelief of their water being a health risk or is linked with health risks. Lastly, the result for the statement “The food establishment owners can manage the quality of their drinking water.” proposes that a vast majority, 32% of the respondents “Strongly Agree” declaring to a similar extent that even if faced with worry the respondents trust that the selected food establishment and its owners adhere to rules and regulations set by global or national health organizations. The following is in favor of the statement, according to Dowling, K. (2022)’s study conducted in Makueni County, South-Eastern Kenya centered on the public’s perception and knowledge on the drinking water quality and possible health complications that may arise, results present that 47% respondents out of the 30% who do not trust and the 23% who were unsure, trust in their drinking water sources alluding to most respondents perceiving these water sources as trustworthy and safe.

The Ion Chromatography Test done to the 6 drinking water from the handpicked determined small food establishments emanates a consistent <0.2 ppm results in all of the samples showed in table 9. This significantly low findings not only a subservient to the 1.50 ppm limit issued by the Department of Health, but also a contradictory to the research study of Cynthia (2007), determining a notable fluoride content within Cavite City and Kawit in 1.24 pmm and 0.96 ppm respectively. Further ascertaining an 88.9% and 58.54% prevalence rate of fluoride in the same two cities in the province of Cavite.

Conclusion

As the breakdown of results find, the corresponding collected data disclosed the reliance of Filipinos to spend elsewhere but in carinderias as Filipino consumers susceptibly purchase things which are on sale and with discounts (Castillo, 2009). Respondents revealed to dine-in occasionally and majority are abundantly comprised of male customers, parallel to the 79% dine out of home findings from Tariga (2021). Most respondents were also clearly found to be aged 20 years old and below, who also claimed that they have finished higher education, a contravention to a 2015 Cavite census where 20% are 15-24 years old. 72.5% of the customers surveyed also stated that they spend less than 100 pesos per meal, consistent with the 2015 Family Income and Expenditure Survey result of lower household income family's expense on food exceeds to 59.7%. Whilst the majority of respondents unveiled to observe the clarity, absence of odor, normal taste, and cleanliness of the cups within the selected carinderias, aligned with expert findings from Farooq et al. (2019) emphasizing the significance of safe and pure water for daily consumption. The customers are also certain of their awareness of the potential complications with the quality of the drinking water they receive. These perceptions are strengthened by Ochoo, B., Sarkar A. & Valcour, J. (2017); Abbas, S., et al (2018); Lv, J., et al (2018); and Copeland, N., et al (2020) as their studies dissect the consumers' strong consciousness and recognition to the safety and quality of potable water they ingest.

On the other hand, the level of fluoride in the drinking water samples were significantly conceded to be lower than the permissible limit of 1.50 ppm set by the Department of Health. Each sample exhibited consistent fluoride levels below 0.2 ppm, contravening the 2007 study of Canlas, et al., where Cavite City and Kawit of the same province respectively transcribed 1.24 ppm and 0.96 ppm concentration of fluoride (Cynthia, C., et al., 2007). This provides reassurance regarding the compliance of the food establishments with the drinking water standards. Thus, the locality of Cavite within Dasmariñas' barangays of Sta. Fe and Buro I's presence bestows adequate service potable water in the present circumstances.

Recommendation

With all the concluded results, the future researchers are highly recommended to include food establishments that serve different sources of drinking water. Henceforth, it is then encouraged to increase the number of samples beyond the six establishments initially analyzed in the study through working with local government agencies to facilitate the gathering of additional samples to allow regular maintenance and regulation of potable water. As the number of respondents per establishment is unique, it is advised to have the respondents of every establishment to be equal to help prevent the possibility of an outlier. This will subsequently ensure a more thorough results and evaluation. Moreover, it is proposed that the local authorities to apply the study's results to community awareness campaigns that desires to enhance customers perception towards potable water and alleviate public worries about the drinking water provided by the establishment.

The selected food establishments in the study maintained and fulfilled the "Clean Water and Sanitation" SDG as the respondents were able to observe the cleanliness of the cups and other silverware, in addition to the results of this study where the fluoride content of their drinking water is deemed as acceptable and safe for the human to drink. This can then serve as the foundation and standard for upcoming conducts of studies in the same field and with the same objectives.

Acknowledgments

Researchers of this study express their earnest gratitude to those who have been an instrument in this research investigation's accomplishment. The volunteerism and participation of Dasmariñas, Cavite, barangays Sta. Fe and Buro I residents are deeply acknowledged, especially to the carinderia owners' authorization and endorsement for the methodology to be accordingly administered. The viability of this would not have been feasible without the permission and directives from the barangay officials, as well as the warm reception of the Valencia family who granted their place for the researchers' momentary sojourn.

To extend appreciation, the reinforcement efforted by the LPU professors to evaluate and appraise the utilized survey instruments is well recognized. The researchers are eminently obliged to work with the service of Aqualab Center for the analysis of the 6 drinking water samples and attain the experimental approach of this study.

All these people and their inclination of exertion are truly appreciated and prominently acknowledged behind the accomplishment of this research study.

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