

**Knowledge, attitudes and practices on  
Types of water bottles consumed by  
Ordinary Level students of two selected schools**

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# **Abstract**

## **Introduction**

The concern about the health issues caused by different materials that are used to make water bottles is rising. In Sri Lanka, reliable statistics on production and consumption of plastic, metal or glass water bottles are unavailable as this is an area of study which has not obtained much attention. Therefore this research was conducted among Ordinary Level students of two selected schools to describe their knowledge, attitudes and practices on usage of water bottles.

## **Objective**

To assess the knowledge, attitudes and practices on the types of water bottles consumed by Ordinary Level students of two selected schools

## **Method**

A descriptive cross sectional study was conducted in two selected schools in Colombo. Ordinary Level students were taken as voluntary participants. The total number of study population was 1000 and the stratified clustering method was used for sampling. Data was collected using a self administered questionnaire and through direct observation by the investigators.

There were several study variables in this study. The sociodemographic characteristics of the study population; knowledge regarding the materials used to make water bottles, health issues related to water bottles and factors affecting them; attitudes on such factors and practices on usage, duration of usage and disposal of used water bottles were some of those variables.

Sociodemographic factors of the study population and the knowledge on types of water bottles were analysed using frequency distribution method and a scoring system respectively. Frequency distribution and percentage were used to analyse all the other variables.

According to the scoring system which was used to analyse the knowledge of the students, they were categorized into two categories as ‘Satisfactory’ and ‘Unsatisfactory’. These two groups were based on the scores obtained by the students to

5 specific questions. Those questions were considered to be assessing the basic knowledge regarding types of water bottles.

## **Results**

In our study sample of 243 students which consisted of 110 females and 133 males, 176 were 15 years old while others were 16 years. Majority of them were Sinhala Buddhists from Colombo district. Almost all of their parents were literate while majority of them had received tertiary education.

According to the results of the study, the knowledge of majority of the students ( 76.3% ) was unsatisfactory. Majority of the students ( 90.5% ) had brought a water bottle to the school everyday. The results of the study showed that a majority of the participants ( 85.0% ) were using plastic water bottles.

Most of the water bottles used by the students were not marked with a resin number. Bottles marked with number one, which should ideally be used only once, were carried by 4.6% of the students. 20.6 % of the students were carrying relatively healthy types of plastic water bottles while 12.1 % of the students were carrying unhealthy types.

From the students who were using metal water bottles nearly an equal number had each of Aluminium which was unhealthy and Stainless steel which was comparatively healthy.

## **Conclusions**

The knowledge of the study population regarding the water bottles and their safety was unsatisfactory. Majority of them were using unhealthy water bottles unknowingly.

## **Recommendations**

As shown in the conclusions above the knowledge on the usage of water bottles in a majority was unsatisfactory and their practices in this regard were poor. Even though this matter has not gained much attention in the society, it can be a major issue when its long term effects are considered. So it is recommended that more attention should be paid regarding this matter to provide knowledge and to build good attitudes and practices on usage of healthy water bottles in the population.

## **Keywords**

Water bottles, harmful leaching substances, Bisphenol A, Phthalates, Endocrine Disrupting Chemicals, Ordinary level students, knowledge, attitudes and practices.

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## List of abbreviations

|             |   |                                                      |
|-------------|---|------------------------------------------------------|
| BPA         | - | <i>Bisphenol A</i>                                   |
| RIC         | - | <i>Resin Identification Code</i>                     |
| ASTM        | - | <i>American Society for Testing and Materials</i>    |
| PET or PETE | - | <i>Polyethylene terephthalate</i>                    |
| HDPE        | - | <i>High density polyethylene</i>                     |
| V or PVC    | - | <i>Polyvinyl chloride</i>                            |
| LDPE        | - | <i>Low density polyethylene</i>                      |
| PC          | - | <i>Polycarbonate</i>                                 |
| PP          | - | <i>Polypropylene</i>                                 |
| PS          | - | <i>Polystyrene</i>                                   |
| SLS         | - | <i>Sri Lanka Standards</i>                           |
| AISI        | - | <i>American Iron and Steel Institute</i>             |
| NIAS        | - | <i>Non-Intentionally Added Substances</i>            |
| UV          | - | <i>Ultraviolet</i>                                   |
| EDC         | - | <i>Endocrine Disrupting Chemical</i>                 |
| DES         | - | <i>Diethylstilbestrol</i>                            |
| EZH2        | - | <i>Enhancer of zeste homolog 2</i>                   |
| NP          | - | <i>Nonylphenol</i>                                   |
| OP          | - | <i>Octylphenol</i>                                   |
| USEPA       | - | <i>United States Environmental Protection Agency</i> |
| MCL         | - | <i>Minimum Contaminant Level</i>                     |
| PH          | - | <i>Potential of Hydrogen</i>                         |

|                |   |                                    |
|----------------|---|------------------------------------|
| <i>BADGE</i>   | - | <i>Bisphenol A diglycyleter</i>    |
| <i>PhA</i>     | - | <i>Phthalic acid</i>               |
| <i>DEHP</i>    | - | <i>Bis(2-ethylhexyl) phthalate</i> |
| <i>DMP</i>     | - | <i>Dimethyl phthalate</i>          |
| <i>DEP</i>     | - | <i>Diethyl phthalate</i>           |
| <i>DiisoBP</i> | - | <i>Diisobutyl phthalate</i>        |
| <i>DBP</i>     | - | <i>Dibutyl phthalate (DBP)</i>     |

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# Chapter 1: Introduction

## 1.1) Background

"Water is life, and clean water means health."

- Audrey Hepburn-

In earlier human times, stitched bladders of dead animals, animal horns and plant shells were used as water containers. Then containers made with clay or porcelain were adopted for water carriage. By 1600 B.C. glass was molded into bottles. (Heartland Springs, 2015)

Later, plastic became the main material for making bottles used for carrying water. By now, water containers made with several types of material namely, plastic, glass and metal are being used.

Although in many developed countries, there is an adequate supply of tap water in public places, many people use bottled water because they believe it to be of a higher quality, cleaner and better-tasting. This makes a big concern for their governments due to a few reasons. The main reason is the huge amount of energy and money required to produce bottled water. Not only in making bottled water, but also recycling of disposable water bottles takes billions. Low recycling rate, costs more than money, because it poses a big threat on the environment. As stated in the article, "Message in a Bottle" by Charles Fishman, Americans have used about 50 billion plastic water bottles in 2007. However, the U.S.'s recycling rate for plastic was only 23 percent, which means 38 billion water bottles - more than \$1 billion worth of plastic - were wasted each year.

There is a rising concern about the health issues caused by using bottled water as highlighted by recent research. Some plastic and metal compounds of water bottles leach chemical substances like BPA, phthalates, nonylphenols and heavy metals like Antimony, Cadmium, and Lead. Research have revealed that these substances can cause genotoxicity, infertility, cancer and endocrine disruptions.

These reasons have forced their authorities to find a solution for this matter immediately. Now, they are trying to make the people use tap water, water pitcher filters and carry the water they need in safe water bottles.

But in Sri Lanka, situation is different from developed countries. Using single-served bottled water is at a stage of becoming common among urban population. Carrying water in sports water bottles is popular among school children and office workers. Various types of water bottles that are used by people could be recognized. Most of them are made from plastic and the remaining is from glass or metal. A fraction of these water bottles consists of sports water bottles that are available in the market. Another fraction comprises of containers which were previously used for storage of food and beverages and now being used to carry water. Bottles containing soft drinks, liquor, cordial and sauce are such containers.

None of the government authorities have reliable statistics on production and consumption of plastic, metal or glass water bottles. This leaves a question whether we are aware on the fact that most of these water containers can cause serious health problems in long term use. This made us think about developing a discussion on this matter and get people's attention on safety of their water bottle.

Through observation, we could identify the various types water bottles used in the community. Plastic bottles are in many types according to the resins from which they are made of. There is a Resin Identification Code (RIC) system in order to make it easier for workers in Materials Recovery and Recycling facilities to sort and separate items according to their resin type. The American Society for Testing and Materials (ASTM) International issued ASTM D7611 - Standard Practice for Coding Plastic Manufactured Articles for Resin Identification in 2008 and revised in 2013. (Bach C. et al., 2011) Now, this RIC can be identified as a symbol where a number is enclosed in a solid triangle.

They are Polyethylene terephthalate (PET or PETE), High density polyethylene (HDPE), Polyvinyl chloride (V or PVC), Low density polyethylene (LDPE), Polypropylene (PP), Polystyrene (PS) and Other resins (Polycarbonate, Acrylic, Nylon, Polylactic) (SLS 1263, 2005)

Among all above, bottles made from PET are the most commonly used. Single served bottled water containers and soft drink bottles are made out of PET which should be used once and recycled after it.

Metal water bottles are mainly produced either from Aluminium or from stainless steel. As Aluminium is reactive with acidic liquids, aluminium bottles are lined with epoxy based resins, which can wear away over time. BPA is often a main

ingredient used in epoxy resin. Stainless steel bottles are typically made from '18/8' (also known as '304' in the American AISI grade designation system) grade stainless steel and there are no known safety issues associated with using stainless steel. Aluminium and stainless steel water bottles can dent and get damaged and then can leach various chemicals in to water. (Cooper et al., 2011)

Although glass water bottles are not much commonly used, their harmful effects are very much less. The glass used for water containers do not leach chemicals in traceable amounts. According to research evidence, water bottles made from glass cause minimum harm to health among all other types of water bottles. The only issue is that glass is breakable and broken glass can cause injury. (Kubwabo et al., 2009).

Scientific evidence on the association between diseases like cancer and the use of unsafe water bottles is available internationally. Due to these hazards many countries have formulated regulations on the production and consumption of water containers.

A declaration of conformity according to European regulation No. 10/2011 is required to ensure the safety of plastic materials in contact with foodstuffs. This regulation established a positive list of substances that are authorized for use in plastic materials. Some compounds are subject to restrictions and/or specifications according to their toxicological data. Despite this, the analysis of PET reveals some non-intentionally added substances (NIAS) produced by authorized initial reactants and additives.

In Sri Lanka, Ministry of Health and Environmental Authority have formulated acts and regulations on bottled water and food packaging and on plastic recycling respectively.

Bottled water are given two certifications, one from The Ministry of Health and the Sri Lanka Standards Institute. CFA/BW/00/0000-00 is issued for bottled drinking water while CFA/NMW/00/0000-00 is given for bottled natural mineral water by the Food Control Unit of the Ministry of Health and has to be renewed every three years.

SLSI issues standard certifications SLS 894 for bottled drinking water and SLS 1038 for bottled natural mineral water.

But, still research has not been done regarding the proportions of variety of water bottles used in Sri Lanka. Also, there is lack of awareness and knowledge among people on selecting a safe water bottle carefully, for long term use.

## **1.2) Justification**

Internationally, much research has been conducted to assess the chemical substances emitted from water containers and their association to serious illnesses like cancer, genotoxicity, infertility and endocrine disruptions. There are international standards and regulations on production and consumption of water containers. In Sri Lanka, so far researches have not been done on this matter and there are no such standards and regulations as in many other countries.

It could be noticed that the awareness and knowledge on the hazard caused by different types of water containers among the Sri Lankan population is low. They are not much concerned about the type of water bottle they use everyday, which material they are made from and the harmful effects they can lead to.

We believe more research has to be carried out on types of water containers consumed by Sri Lankan population and the disease conditions associated with them. Based on research evidence standards and regulations should be formulated and implemented by the relevant authorities. People also should improve their knowledge and attitudes on this matter. This is an immense process which requires a lot of time and effort. We intend to take the initial step of creating a healthy society which consumes healthy and safe water.

School students were selected as the study population due to a few reasons. It is the population that use sport water bottles commonly than any other population group. Chemicals leached from water containers can lead to various disease conditions that affect them in their future lives. Schools children are the ones who step out into the society in a few years time as the working force of the country. It is very important to safeguard their wellbeing as the future of the country will be in their hands.

We could not take primary school children for this study as they usually do not choose the water bottle they use themselves. Most of elderly school children usually stay away from carrying water bottles. Considering above reasons and feasibility we chose students of 15-16 years of age for the study population.

In order to have an adequate sampling frame of at least 1500, we selected ordinary level students from two main schools in Colombo. One boys' school and one girls' school which have an approximately similar number of student population were taken to keep a good socio-demographic variation.

Since there are no similar research done in Sri Lanka among school children on water bottles they use, we expect our research would reveal many new aspects of knowledge, attitudes and practices on the types of water bottles consumed by population in Sri Lanka. Therefore this would be useful in planning effective measures to prevent any harmful utilization in the future.

### **1.3) Objectives**

#### **1.3.1) General objective**

To assess the knowledge, attitudes and practices on the types of water bottles consumed by ordinary level students of two selected schools.

#### **1.3.2) Specific objectives**

1. To describe the socio-demographic characteristics of ordinary level students of two selected schools.
2. To assess the knowledge on the types of water bottles consumed by ordinary level students of two selected schools.
3. To determine the attitudes towards maintaining the safety of the water bottle among ordinary level students of two selected schools.
4. To describe the practices on use of water bottles by ordinary level students of two selected schools.

## Chapter 2: Literature Review

So far, research has not been conducted to study the variety in the types of water bottles consumed by any community either in the local or international setting. But there are many research carried out to study the quality of drinking water, migration of substances from water containers and their effects on health. Our objective is to assess the proportions of various types of water bottles used by school students. By that, we are trying to make the reader concerned on health related issues resulted from the use of various types of water containers. We therefore paid much attention to the international research conducted on migration of substances from water containers and their consequences on health.

By reviewing related literature, we found that different types of materials that are used to make water bottles leach chemicals like BPA, Nonylphenol, Phthalates and heavy metals like Antimony, Cadmium and Lead. The type and the amount of chemicals emitted vary according to the type of material from which the bottle is made of, the duration of storage of water, the environmental factors and the physical condition of the water bottle. Above mentioned chemical substances can lead to cancer, genotoxicity, infertility, diabetes, heart diseases and asthma.

“Primary packaging or the layer of packaging in immediate contact with the product, is made with high-density polyethylene (HDPE), polyethylene terephthalate (PET) and polycarbonate (PC), while caps are made of high-density polyethylene (HDPE), low-density polyethylene (LDPE) and polystyrene (PS) is used as septa in many caps” (World Packaging Organization, 2008). Bolgar et al. (2008) and Piringer and Baner (2008) mentioned that these polymers contain additives such as antifogging, reinforcing and antistatic agents, blowing agents, colorants, fillers, lubricants, nucleating agents, optical brighteners, heat and light stabilizers, antacids, antimicrobials, antioxidants, chain-breaking, photo- and hydroperoxide deactivating antioxidants, dehydrating agents, light screening pigments and UV absorbers. These additives cause the migration of various substances in to water.

Bisphenol A (BPA) is an endocrine disrupting chemical (EDC) which is used as a monomer for the production of polycarbonate and epoxy resins. Human exposure to BPA is taking much attention all over the world. (Wetherill et al., 2007). “In the

general population, exposure to BPA occurs mainly by consumption of contaminated foods and beverages that have contacted epoxy resins or polycarbonate plastics” (NTP, 2008)

In a recent study, laboratory animal models were exposed to doses of BPA that correspond to those observed in humans and adverse health effects were detected. This showed that the endocrine disrupting activities of BPA contribute to adverse effects on human health (Richter et al., 2007).

In a research done by University of Cincinnati College of Medicine, BPA was found to migrate from polycarbonate water bottles at rates ranging from 0.20 ng/h to 0.79 ng/h. Exposure to boiling water (100 °C) increased the rate of BPA migration by up to 55-fold. The estrogenic bioactivity of the BPA-like immunoreactivity released into the water samples was confirmed using an in vitro assay of rapid estrogen signaling and neurotoxicity in developing cerebellar neurons. The amounts of BPA found to migrate from polycarbonate drinking bottles should be considered as a contributing source to the total “EDC-burden” to which some individuals are exposed”. (Le H.H. et al., 2007)

Wong et al. (2001, 2003) used a rapid and sensitive in vitro assay that detects “non-genomic” rapid estrogenic signaling effects in developing neurons and detected BPA in water samples from the PC drinking bottles

Exposure of new PC baby bottles to boiling water had caused leaching of BPA ( $0.23 \pm 0.12$  ng/ml). After procedures of dishwashing, brushing and boiling, the concentrations of BPA were elevated to  $8.4 \pm 4$  ng/ml, a 36.5-fold increase (Brede et al., 2003).

In the seminal study of Krishnan and coworkers done in 1993, biologically active and environmentally relevant levels of BPA (minimal concentration of  $\sim 2.85$  ng/ml) were shown to leach into water from PC flasks used for growth of baker's yeast (*Saccharomyces cerevisiae*) upon autoclaving at 120–125 °C. These studies show that BPA can migrate from PC into water at elevated temperature.

A significant amount of BPA is released from PC food and beverage containers. But according to current acceptable exposure levels their potential adverse health effects were considered minimal (Mountfort et al., 1997; Brede et al., 2003; D’Antuono et al., 2001; Wong et al., 2005). Rajapakse et al. (2002) mentioned that “However, mixtures of different estrogenic chemicals can have much greater disruptive effects than those

predicted from exposure to low concentrations of an individual compound.” Some studies have demonstrated that even though BPA alone acts as a highly potent and efficacious estradiol mimetic, when combines with estradiol, it acts as a potent antagonist of estrogen signaling (Zsarnovszky et al., 2005). Above findings reveal that we cannot arrive at a conclusion about the effects of exposure to EDCs from the results of single compound studies. Therefore the concentrations of BPA that contaminate drinking water and foods stored in PC bottles is just a single component of total mixture of EDCs.

Observations of Manikkam et al. (2013), demonstrate that a mixture of plastic derived compounds, BPA and phthalates, can promote epigenetic transgenerational inheritance of adult onset disease.

Researches have demonstrated a novel mechanism by which endocrine-disrupting chemicals regulate developmental programming in the breast. Exposure to DES or BPA in utero alters mammary tissue expression of EZH2. It is a histone methyltransferase with known associations to tumorigenesis. Increased expression of EZH2 is a marker of increased breast cancer risk (Doherty L.F. et al., 2010; Ding L. et al., 2006).

Rosales J.E.L. et al. (2004) measured nonylphenol (NP), octylphenol (OP), and their respective ethoxylates (1-5) in spring water bottled in three different types of plastic (HDPE, PET, and PVC). Water from HDPE bottles contained NP and OP. NP was also present in water from PVC containers. Neither the NP- nor the OP-ethoxylates were detected in any of the PET samples.

A study was done to determine whether or not the commercially available “BPA-free” reusable water bottles were indeed free of BPA that could migrate into water stored in these. It is difficult to know based solely on the nature of the polymer whether the materials are truly free of BPA. Their analysis found that BPA was not detected in water incubated in Nalgen branded water bottles made of Tritan (is a BPA-free plastic).

As aluminum is reactive with acidic liquids, aluminum bottles have to be lined with an enamel or epoxy layer. Relatively high levels of BPA are released into drinking water from aluminium bottles with an epoxy-based liner. Heating had greatly increased the release of BPA. BPA was not detected in water stored in unlined stainless steel, EcoCare™ copolyester lined aluminium, or copolyester Tritan™ plastic water bottles (James E. Cooper et al., 2011).

Aluminium bottles are durable, but they may dent when fallen which may affect the efficacy of the liner within. The most popular aluminum bottles have very narrow necks making them difficult to clean and dry. They are not dishwasher safe. Aluminum bottles with certain types of lining are not recyclable. Therefore stainless steel water bottles are comparatively safe to use than aluminium bottles.

Antimony can cause several health effects such as nausea, vomiting and diarrhea. Long term exposure of antimony can result in increased blood cholesterol levels and low blood sugar levels. (Westerhoff et al., 2007). The US Environmental Protection Agency (USEPA) regulate antimony at a minimum contaminant level (MCL) of 6ppb ( $\mu\text{g/L}$ ).

Many studies have been conducted to study the release of antimony and other heavy metals from plastic bottles. In these studies, experiments were conducted to study the factors that could affect the release of metal elements.

Westerhoff et al. (2007) studied 9 commercial brands of bottled water stored in PET bottles and found that leaching of antimony is low at temperatures below 60°C. Cheng et al. (2009) studied leaching concentrations of 16 metal elements including antimony, cadmium and lead in 21 different types of plastic bottles which were made of recycling materials ranging from 1-7

Increase in storage temperature had caused faster leaching of antimony (Westerhoff et al., 2007). Storage of boiling water had increased antimony concentration four times which was higher than 6 $\mu\text{g/L}$ . Exposure to sunlight and in-car storage had increased antimony levels in water. (Cheng et al., 2009)

It is important to study the effect of PH on leaching of metal elements as fruit juices are usually carried in plastic bottles. Research has found that PH had no effect on leaching of antimony when the PH of stored water is between PH 6-8. Shotyk et al. (2006); Shotyk and Krachler (2007); Cheng et al. (2009) found that antimony concentration was increased at low PH. Therefore it is evident that antimony leaching rises when acidic liquids are stored in plastic water bottles.

Leaching of antimony had decreased after washing procedures. (Cheng et al., 2009) Therefore, it is really important to wash bottles before first use as some antimony could be removed from plastic surface by washing.

Findings of Martin Wagner & Jörg Oehlmann (2009) provide evidence for a broad contamination of mineral water with xenoestrogens. It is mentioned that mineral water bottled in PET and Tetra Pak is more estrogenic than water bottled in glass. These chemicals come from the additives such as plasticizers or catalysts that migrate from the plastic bottle into the water.

Casajuana & Lacorte (2003) analysed 5 phthalate esters (dimethylphthalate, diethylphthalate, di-n-butylphthalate, butylbenzylphthalate, di(2-ethylhexyl)phthalate), nonylphenol, bisphenol A and BADGE (Bisphenol A diglycyleter) in distribution and bottled water. These are chemicals used in the manufacture of epoxy resins, polycarbonate and polyethylene plastics or surfactants. They have a high migration potential from plastic containers and have endocrine disrupting properties.

In a study, phthalic acid (PhA), bis(2-ethylhexyl) phthalate (DEHP), dimethyl phthalate (DMP), diethyl phthalate (DEP), diisobutyl phthalate (DiisoBP) and dibutyl phthalate (DBP) were analyzed in a large number of bottled water samples in Italy. Results showed different concentrations of phthalates in water stored in PET bottles are nearly 20 times higher than that in glass bottles (Montuori et al., 2008). Another research found antimony in up to 30 times higher concentrations in mineral water from PET compared to glass bottles and confirmed its leaching from PET (Shotyk and Krachler, 2007). Tests for leachable lead and cadmium were conducted on glass baby bottles and no detectable lead or cadmium was found. (Kubwabo et al., 2009). These show that glass bottles are much safer than plastic bottles with regard to the migration of harmful substances in to the water they contain.

Another study analyzed water stored in one hundred and twenty-six bottles of three different materials (glass, hard PET and soft PET) in 5 principal colours (clear, light and dark green and blue, brown). Concentrations of 57 elements were determined after 1, 2, 3, 4, 5, 15, 30, 56, 80 and 150 days of leaching. Concentrations of most elements had increased at pH 3.5. Dark coloured bottles had leached more than clear bottles, independent of bottle material (Reimann et al., 2010). This study shows that acidity of the water and colour of the bottle can cause an enhancement in leaching of elements.

In conclusion these researches clearly prove that some plastic and some metal water containers can leach endocrine disrupting chemicals (EDC) such as BPA, nonylphenols, phthalates in to the water and that can lead to cause serious diseases like

cancer, genotoxicity and infertility. Many researches state that PET is suitable for one-time use and, BPA free polycarbonates, HDPE, LDPE, PP, copolyester plastics, copolyester coated aluminium, stainless steel and glass do not leach any harmful substances into water in considerable amounts.

## **Chapter 3: Study Method**

### **3.1) Study design**

A descriptive cross sectional study was used. Research evidence on this topic is not much available especially in Sri Lanka. Therefore, through this study, we wanted to obtain information on usage of water bottles by the population at a specified point of time.

### **3.2) Study setting**

Two schools in Colombo were selected for the study.

Royal College, Colombo 7 ; has about 9000 male students.

; has about 650 Grade 11 students.

Visakha Vidyalaya, Colombo 5 ; has about 4500 female students.

; has about 360 Grade 11 students.

To have an adequate sampling frame of at least 1000, Ordinary Level students from two main national schools in Colombo were chosen for the study. To keep a good socio-demographic variation, one boys' school and one girls' school having an approximately similar number of student population were taken.

### **3.3) Study population**

Ordinary level students of Royal College, Colombo 7 and Visakha vidyalaya, Colombo 5 were taken as voluntary participants. Total number of study population was approximately 1000.

Inclusion criteria - the students who were present on the day the research was conducted.

### **3.4) Sample size**

Consent forms were given to 308 students in 9 class rooms. On the day the research was conducted, a total number of 243 students had taken the consent from their parents. Therefore they were recruited from the study population as the sample, considering feasibility, time and resources available for data collection.

### **3.5) Sampling method**

Stratified clustering method was used for sampling. Sampling was done in two stages. In the first stage, study population was divided into two groups as male students and female students. Then the 650 male students who were in 16 classrooms in Royal College and 360 female students in 8 classrooms in Visakha Vidyalaya were divided into 24 clusters according to their classes.

In the second stage, five clusters from male group and four clusters from female group were taken randomly. In fact five classrooms of boys each having 40 students and four classrooms of girls each having 45 students were selected to ensure that Sri Lankan demographic sex ratios were maintained.

But those who were present in each classroom on the particular day, were included in the study. Therefore, consent forms were distributed among 308 students.

In this study, we divided the study population into strata as males and females. In school, students of each grade were already divided into classes consisting of about 40-45 students. Considering feasibility, time and resources available for data collection each classroom was taken as a cluster.

### **3.6) Study instruments**

The study instruments in our study served two purposes. First was to assess the knowledge on the types of water bottles and to determine the attitudes towards maintaining the safety of water bottles among the study population. Second was to describe the practices on use of water bottles by the study population.

Therefore we used 2 study instruments;

1. A pretested, structured, self-administered questionnaire. The questionnaire had different sections including the following:

- Socio-demographic characteristics of the study population
- Knowledge on the types of water bottles
- Attitudes towards maintaining the safety of the water bottles they use
- Practices on use of water bottles

The questionnaire was available in Sinhala, Tamil and English for the convenience of participants.

2. An assessment tool to assess the characteristics of water bottles consumed by the participants. This was filled up by the investigators through direct observation.

Both the questionnaire and the assessment tool were attached together and given to the students. Investigators filled up the tool when the students were working on the questionnaire.

By our study tools, self-administered questionnaire and direct assessment tool, we expected to collect data on many study variables.

- Socio-demographic characteristics of the study population
- Knowledge regarding the health related issues caused by the materials used to make water bottles
- Knowledge regarding the Resin number indicated in the plastic bottles
- Knowledge about the factors which can challenge the safety of water they use daily
- Factors considered when buying a new water bottle
- The attitude on the connection between the safety of the water bottle and material it is made of
- The attitude on presence of a connection between the safety of the water bottle and its appearance and cost
- Practices and attitudes on disposal of used water bottle
- Whether a water bottle is carried on a daily basis or not
- Duration of consumption of a water bottle
- What material is the water bottle made of
- If a plastic bottle is carried, its resin number
- If a metal water bottle is carried, any damages visible or not

### **3.7) Method of data collection**

The investigators visited the two schools and collected data using two methods: by administering a questionnaire and through direct observation. Students were given both the pretested, structured, self-administered questionnaire and assessment tool together.

Then the investigators directly observed the characteristics of water bottles consumed by participants and assessed them by using the assessment tool when the students were filling the questionnaire.

### **3.8) Data analysis**

Socio-demographic factors of the study population were analysed using frequency distribution method. A scoring system was prepared to analyse the knowledge on the types of water bottles. Then scores were given for the responses obtained for the three variables; knowledge regarding the health related issues caused by the materials used to make water bottles, knowledge regarding the Resin number indicated in the plastic bottles and knowledge about the factors which can challenge the safety of water. Then those three variables were analysed according to the score obtained.

From the 21 questions which assessed the knowledge of the students, 5 specific questions were selected and the scores obtained for them were analysed.

1. Question 2.A.1 - What are the materials you know of, that are used to make water bottles? (3 marks)
2. Question 2.A.2 - Can usage of bottles to carry water cause health related problems? (1 mark)
3. Question 2.B.1 - Have you seen a number enclosed in a triangle at the bottom of plastic water bottles before? (1 mark)
4. Question 2.B.2 - Can there be a connection between the above mentioned number and the safety of the water bottle? (1 mark)
5. Question 2.C.1 - Is carrying boiling (100°C) water in plastic bottles healthy? (1 mark)

Those five questions were selected because we considered that they assess the mandatory knowledge regarding the types of water bottles and the health effects caused by them.

The students who scored 7 for those specific questions were considered to be having a satisfactory basic knowledge about water bottles and those who did not were considered to be having unsatisfactory knowledge.

Factors considered when buying a new water bottle were analysed using the ones to which the students had given the priority. The attitudes on the safety of the bottle and its features were categorised into 5 categories as strongly disagree, disagree, moderate, agree and strongly agree.

All the other variables were analysed using frequency distribution and percentage. The data collected for each of the above variables were entered into separate tables. Then the behaviour of each variable in the sample was derived from the proportions that could be obtained from the tables. By that we arrived into conclusions and identified the usage of different types of water bottles and its related knowledge and attitudes among the study population.

### **3.9) Ethical considerations**

1. From this research it was expected to identify the knowledge, attitudes and practices on the types of water bottles consumed by school children. There were both harmless and harmful types of water bottles available in Sri Lankan market. We were going to see which proportion of school children carry harmful water bottles and later we will be teaching them the harmful effects of using such bottles. And also we hope to publish our results in both national and international forums in order to create awareness in the community.
2. Written approval to conduct the research was obtained from the Principals of Royal College, Colombo 7 and Visakha Vidyalaya, Colombo 5. The students in the Ordinary Level classes were informed about the study purpose and the nature and the objective of the study.

In order to respect the autonomy of participants, informed consent was taken from all the participants. As school children participated for the study, informed

consent was taken from the parents. On a day prior to the data collection day, students were provided with an information sheet regarding the study and a consent form. The information sheet included the purpose of the study, duration and procedure of the study, benefits, risks and the way confidentiality would be maintained. The contact details of the researchers were provided in the information sheet, so that they could clarify any doubt.

The students were informed to get their parents' informed consent. Students who got consent from parents were given assent forms and their informed assent was taken. Time was given for them to read and understand the information sheet well and to clarify any doubt they had.

3. The questionnaire was prepared in Sinhala, Tamil and English languages. It underwent a process of refinement and was pretested and checked by professionals.
4. The questionnaire did not contain any sensitive or too personal questions and it did not lead to any psychological issues in students.
5. The confidentiality of every participant was ensured. Questions regarding any private detail were not included in the questionnaire and each it was distributed with an envelope so that the participants could put the questionnaire inside after filling. The completed questionnaires were collected by the researchers themselves. The collected data is kept in a locked cupboard with secrecy. Only the 3 researchers are allowed to access them. The data will be burnt completely after one year.
6. As the study population was comprised of school children, disturbance to their academics was reduced by collecting data once the academics for the term had been finished. Also, collection of data was carried out during the school interval.
7. There was no immediate and direct benefit to participants but we hope that results of this research would help to get the attention of government health policy makers to take necessary actions to prevent any harm in the future.
8. Participants could withdraw from the study at any time that they wish without having to give a reason. They were not victimized in any way by withdrawing from the study.
9. Rewards, compensation or any reimbursement were not provided to participants and their accompanying persons.

10. We confirm that our research is not funded by any company related to the production or trade in water bottles and none of us have connections with such a company. Also we are not advertising any brand of water bottles.

## Chapter 4: Results

### 1. Description of socio-demographic characteristics of ordinary level students of two selected schools.

This study was conducted among the Ordinary Level students of two selected schools in Colombo. Information was gathered by a self administered questionnaire and through direct observation by the investigators. 243 students participated in the study.

**Tabel 4.1: Distribution of Socio-Demographic Factors among Ordinary Level students of Royal College and Visakha Vidyalaya Colombo. ( N = 243 )**

| Characteristics  | Frequency | Percentage |
|------------------|-----------|------------|
| <b>Age</b>       |           |            |
| 15 years         | 176       | 72.4%      |
| 16 years         | 67        | 27.6%      |
| <b>Sex</b>       |           |            |
| Female           | 110       | 45.3%      |
| Male             | 133       | 54.7%      |
| <b>Ethnicity</b> |           |            |
| Sinhala          | 234       | 96.3%      |
| Muslim           | 7         | 2.9%       |
| Burger           | 1         | 0.4%       |
| Other            | 1         | 0.4%       |
| <b>Religion</b>  |           |            |
| Buddhism         | 231       | 95.1%      |
| Islam            | 8         | 3.3%       |
| Catholic         | 4         | 1.6%       |
| Other            |           |            |
| <b>District</b>  |           |            |
| Colombo          | 199       | 81.9%      |
| Gampaha          | 20        | 8.2%       |
| Kalutara         | 14        | 5.8%       |
| Galle            | 5         | 2.1%       |
| Hambantota       | 1         | 0.4%       |
| Kurunagala       | 1         | 0.4%       |
| Ratnapura        | 3         | 1.2%       |

**Tabel 4.2: Monthly household income and parental education level of Ordinary level students of two selected schools. ( N = 243 )**

| Characteristics                       | Frequency | Percentage |
|---------------------------------------|-----------|------------|
| <b>Monthly Household Income (Rs.)</b> |           |            |
| <25,000                               | 4         | 1.6%       |
| 25,000 – 100,000                      | 72        | 29.7%      |
| >100,000                              | 124       | 51.0%      |
| <b>Father's Education Level</b>       |           |            |
| No normal education                   | 0         | 0.0%       |
| Primary                               | 1         | 0.4%       |
| Ordinary Level                        | 6         | 2.5%       |
| Advanced Level                        | 66        | 27.2%      |
| Diploma                               | 27        | 11.1%      |
| Graduate                              | 68        | 28.0%      |
| Post Graduate                         | 35        | 14.4%      |
| Other                                 | 0         | 0%         |
| <b>Mother's Education Level</b>       |           |            |
| No normal education                   | 2         | 0.8%       |
| Primary                               | 1         | 0.4%       |
| Ordinary Level                        | 3         | 1.2%       |
| Advanced Level                        | 77        | 31.7%      |
| Diploma                               | 33        | 13.6%      |
| Graduate                              | 67        | 27.6%      |
| Post Graduate                         | 25        | 10.3%      |
| Other                                 | 0         | 0.0%       |

Students in the age of 15 and 16 years were selected for the study. Table 4.1 shows that the majority of the students ( 72.4% ) were in the age of 15 years. This study was conducted among 110 female students and 133 male students.

Majority of the students were Sinhalese ( 96.3% ) and Buddhists ( 95.1% ).

Table 4.1 shows that a majority of the students ( 81.9% ) were from Colombo district. 8.2% and 5.8% of the students were from Gampaha and Kalutara districts respectively.

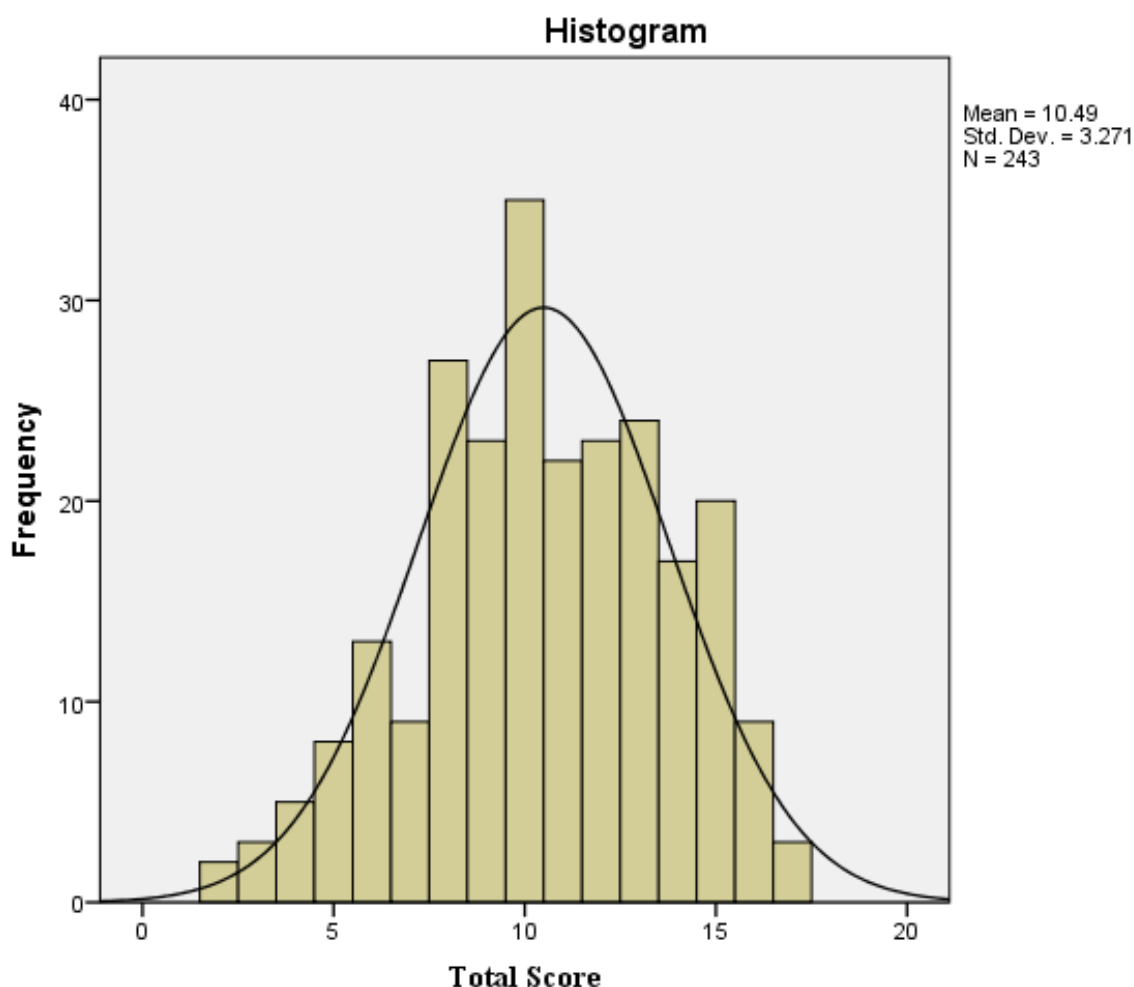
According to Table 4.2, the monthly household income of a majority of the participants ( 51.0% ) was above Rs. 100,000 while that of a minority of participants ( 1.6% ) was below Rs 25,000. Forty three students were unaware of their monthly household income.

Table 4.2 shows that, 27.2% of the fathers and 31.7% of the mothers were educated upto Advanced Level. 28.0% of the fathers and 27.6% of the mothers were graduates and 14.4% of the fathers and 10.3% of the mothers were post graduates. None of the fathers and 0.8% of the mothers had had no formal education. Forty students were not aware about their father's education level while 35 of them were unaware of that of their mother's.

## 2. Assessment of the knowledge on the types of water bottles consumed by ordinary level students of two selected schools.

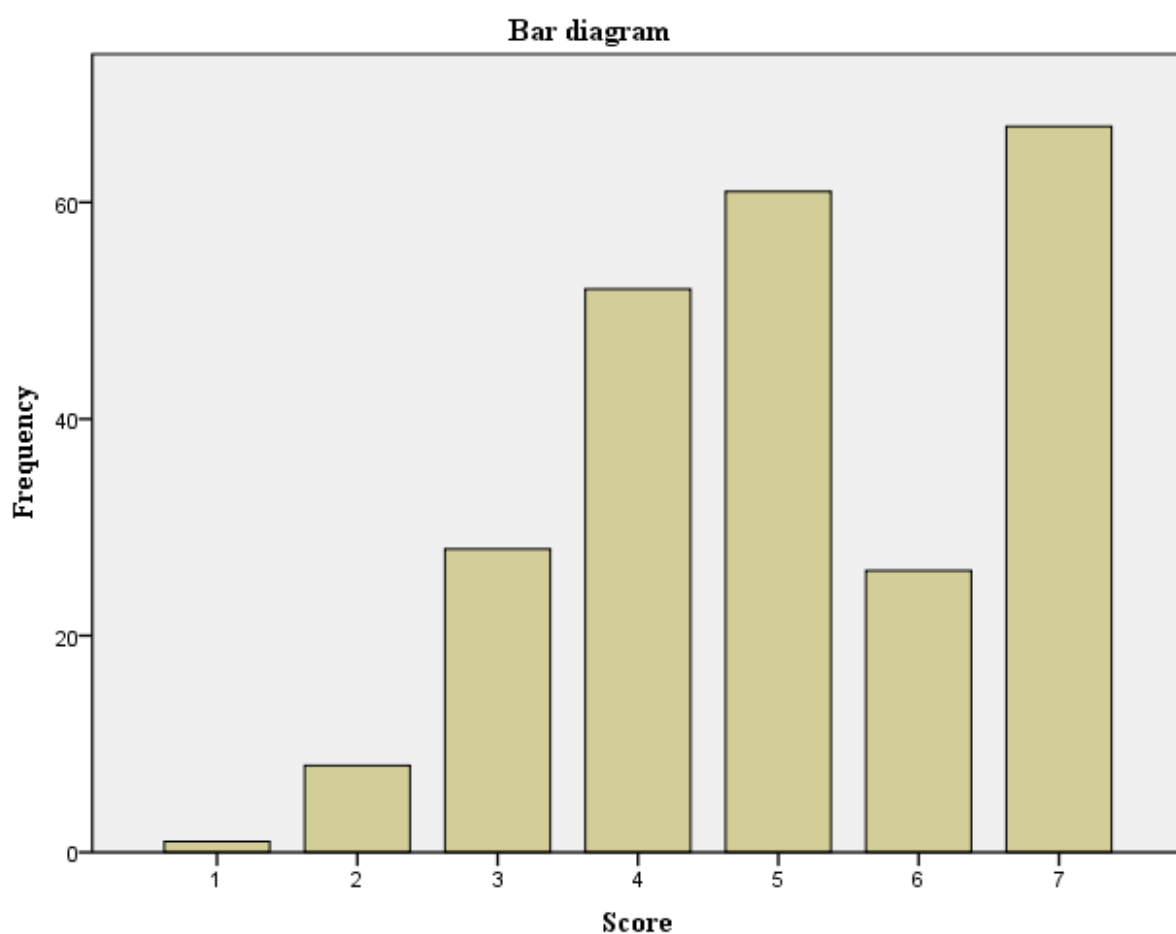
To assess the knowledge on the types of water bottles, we used 21 questions in the self administered questionnaire. Scores were allocated for the answers given by students to those questions. The following histogram shows the distribution of scores obtained by the students.

**Figure 4.1: Distribution of scores obtained by the students**



From the 21 questions which assessed the knowledge of the students, 5 specific questions were selected and the scores obtained for them were analysed. Those five questions assessed the basic knowledge about the types of water bottles. The students who scored 7 for those specific questions were considered to be having a satisfactory basic knowledge about water bottles and those who did not were considered to be having unsatisfactory knowledge.

**Figure 4.2: Distribution of scores obtained for selected questions**



Knowledge of only 23.7% of the students was satisfactory while a that of a majority of the students ( 76.3% ) was unsatisfactory.

### 3. Determination of the attitudes towards maintaining the safety of the water bottles among ordinary level students of two selected schools.

The following results were obtained from the data recorded by the students themselves in the self administered questionnaire.

**Table 4.3: Factors which are most considered by the students when buying a new water bottle**

| Factor       | Frequency  | Percentage   |
|--------------|------------|--------------|
| Brand        | 28         | 11.9         |
| Material     | 93         | 39.6         |
| Price        | 15         | 6.4          |
| Capacity     | 41         | 17.4         |
| Durability   | 28         | 11.9         |
| Shape        | 18         | 7.7          |
| Colour       | 12         | 5.1          |
| <b>Total</b> | <b>235</b> | <b>100.0</b> |

According to the answers given to the question about factors considered by them when buying a water bottle 39.6 % were considering the material while only 6.4 % were considering the price. The other factors were given priority according to the following order; capacity, brand, durability and shape.

Attitudes on safety of different types of water bottles among students were assessed using five statements. The students had to select one response out of five according to their attitudes on each statement. The five responses were ‘Strongly Disagree’, ‘Disagree’, ‘Moderate’, ‘Agree’ and ‘Strongly agree’ and were allocated scores from 1 to 5 respectively.

**Table 4.4: Attitudes on safety of different types of water bottles among students**

|                | Plastic bottles are healthy | Metal bottles are healthy | Glass bottles are healthy | Good appearance | Expensive bottles |
|----------------|-----------------------------|---------------------------|---------------------------|-----------------|-------------------|
| Mean           | 2.57                        | 3.10                      | 3.96                      | 1.97            | 2.29              |
| Median         | 3.00                        | 3.00                      | 4.00                      | 2.00            | 2.00              |
| Std. Deviation | 0.819                       | 0.734                     | 0.814                     | 0.811           | 0.962             |

The above table shows the mean scores obtained for each statement. According to the majority of the students, glass water bottles are healthy ( mean = 3.96 ). Students had a

moderate opinion on the safety of plastic ( mean = 2.57 ) and metal ( mean = 3.10 ) bottles. Majority of the students had disagreed to the statements, ‘Bottles with good appearance are healthy’ ( mean = 1.97 ) and ‘Expensive bottles are healthy’( mean = 2.29 ).

**Table 4.5: Distribution of students according to their consideration of the colour code in garbage bins when discarding water bottles.**

|                  | Frequency  | Percentage   |
|------------------|------------|--------------|
| Not at all       | 64         | 26.3         |
| Sometimes        | 75         | 30.9         |
| Most of the time | 63         | 25.9         |
| All the time     | 41         | 16.9         |
| <b>Total</b>     | <b>243</b> | <b>100.0</b> |

When disposing a used water bottle 16.9 % students were considering the colour code in the garbage bins all the time while 26.3 % of others were never considering.

#### **4. Description of practices on use of water bottles by ordinary level students of two selected schools.**

The following results were obtained from the data recorded by the students themselves in the self administered questionnaire.

In this study sample of 243, majority of the students ( 90.5% ) were usually carrying a water bottle to school everyday. 85.7 % of the male students and 96.4% of the female students were carrying water bottles.

**Table 4.6: Relationship between the sex and usage of a water bottle among the study population**

| Sex          | Carrying a water bottle | Not carrying a water bottle | Total                 | Significance                        |
|--------------|-------------------------|-----------------------------|-----------------------|-------------------------------------|
| Male         | 114 ( 85.7% )           | 19 ( 14.3% )                | 133 ( 100.0% )        | $\chi^2 = 7$<br>df = 1<br>p = 0.005 |
| Female       | 106 ( 96.4% )           | 4 ( 3.6% )                  | 110 ( 100.0% )        |                                     |
| <b>Total</b> | <b>220 ( 90.5% )</b>    | <b>23 ( 9.5% )</b>          | <b>243 ( 100.0% )</b> |                                     |

Therefore there was a statistically significant difference between the sex and the usage of a water bottle among the students. Carrying a water bottle is more common among female students.

The following information was gathered only from the 220 students who usually carry a water bottle to school everyday.

**Table 4.7: Different types of water bottles used by the students**

| Type of water bottle | Frequency  | Percentage   |
|----------------------|------------|--------------|
| Plastic              | 187        | 85.0         |
| Metal                | 25         | 11.4         |
| Glass                | 5          | 2.3          |
| Other                | 3          | 1.4          |
| <b>Total</b>         | <b>220</b> | <b>100.0</b> |

A majority of the students ( 85.0% ) were using plastic water bottles while a minority were using water bottles made out of other materials such as rubber and polythene. 11.4% and 2.3% of the students were using metal and glass bottles respectively.

**Table 4.8: Distribution of the duration of use of a single water bottle by the students**

| Duration           | Frequency  | Percentage   |
|--------------------|------------|--------------|
| < 1 week           | 3          | 1.4          |
| 1 week             | 8          | 3.6          |
| 1 month            | 5          | 2.3          |
| 1 month - 6 months | 57         | 25.9         |
| 6 months - 1 year  | 105        | 47.7         |
| > 1 year           | 42         | 19.1         |
| <b>Total</b>       | <b>220</b> | <b>100.0</b> |

Table 4.8 shows that most of the participants had used a single water bottle for a duration between six months to one year while 25.9 % of them had used for a duration between one month to six months. There were 19.1% of students who had used a single bottle for more than one year.

**Table 4.9: Reasons for students to change their water bottle**

| Reason                                              | Frequency | Percentage |
|-----------------------------------------------------|-----------|------------|
| Necessity to change the water bottle after sometime | 137       | 42.0       |
| Dents                                               | 49        | 15.0       |
| Scratches                                           | 53        | 16.3       |
| Discolouration                                      | 66        | 20.2       |
| Other reasons                                       | 21        | 6.4        |

Most of the students ( 42.0% ) had changed their water bottle into a new one as a habit. A least number of students ( 6.4% ) had done so when the bottle was broken or lost. In this research those reasons were categorised as ‘other reasons’. Other students had changed their bottle due to various reasons such as dents ( 15.0% ), scratches ( 16.3% ) and discolouration ( 20.2% ) in the bottle.

### **Direct observation**

The following results were obtained from the data gathered through the direct observation of water bottles used by the participants. This direct observation was done by the investigators.

**Table 4.10: Number of students who brought a water bottle to the school**

|              | Frequency  | Percentage   |
|--------------|------------|--------------|
| Yes          | 206        | 84.8         |
| No           | 37         | 15.2         |
| <b>Total</b> | <b>243</b> | <b>100.0</b> |

The above table shows that among the 243 students, 206 ( 84.8% ) had brought a water bottle to school on the day the data collection was done. Data collected from those 206 students are included in below tables.

**Table 4.11: Distribution of students according to the type of water bottle they bring to school**

|              | Frequency  | Percentage   |
|--------------|------------|--------------|
| Plastic      | 177        | 85.9         |
| Metal        | 25         | 12.1         |
| Glass        | 4          | 1.9          |
| <b>Total</b> | <b>206</b> | <b>100.0</b> |

A majority of the participants ( 85.9% ) had brought plastic water bottles while a minority of them ( 1.9% ) had glass bottles. 12.1% of the participants had brought metal water bottles.

**Table 4.12: Distribution of resin numbers of the water bottles carried by students ( N = 177 )**

|              | Frequency  | Percentage |
|--------------|------------|------------|
| Not marked   | 57         | 32.2       |
| 1            | 13         | 7.3        |
| 2            | 1          | 0.5        |
| 3            | 1          | 0.5        |
| 4            | 16         | 9.0        |
| 5            | 41         | 23.1       |
| 58           | 15         | 8.4        |
| 7            | 33         | 18.6       |
| <b>Total</b> | <b>177</b> | <b>100</b> |

Most of the water bottles ( 20.1% ) used by the students were not marked with a resin number. Out of the bottles which contained the resin numbers, most ( 14.5% ) were marked with number 5. 11.7% of the participants had used bottles marked with number 7. Nearly equal proportions of students had bottles marked with resin numbers 1, 4 and 58. A minority of students ( 0.4% ) used bottles containing numbers 2 and 3.

**Table 4.13: Distribution of different types of metal water bottles carried by students**

| Type of water bottle | Frequency | Percentage   |
|----------------------|-----------|--------------|
| Aluminium            | 13        | 52.0         |
| Stainless steel      | 12        | 48.0         |
| <b>Total</b>         | <b>25</b> | <b>100.0</b> |

Among the students who had metal water bottles, 52% were using aluminium bottles and 48% were using stainless steel bottles.

**Table 4.14: Various damages seen in water bottles carried by students**

|                   | Frequency  | Percentage |
|-------------------|------------|------------|
| None              | 181        | 87.8       |
| Scratches inside  | 2          | 0.9        |
| Scratches outside | 11         | 5.3        |
| Dents             | 12         | 5.8        |
| <b>Total</b>      | <b>206</b> | <b>100</b> |

Majority of the bottles used by the students ( 87.8% ) did not have any damages. Among the bottles that were damaged, 5.8% were dented and 5.3% had scratches outside of the bottle. Scratches inside the bottle were observed in only 0.9% of the bottles.

From the 21 questions which assessed the knowledge of the students, 5 specific questions were selected and the scores obtained for them were analysed. Those five questions assessed the basic knowledge about the types of water bottles. The students who scored 7 for those specific questions were considered to be having a satisfactory basic knowledge about water bottles and those who did not were considered to be having unsatisfactory knowledge.

The plastic water bottles marked with resin numbers 2,4, and 5, stainless steel water bottles without any damages and glass water bottles are considered to be healthy to use. Plastic water bottles marked with numbers 1,3,6 and 7, aluminium water bottles and stainless steel water bottles with damages are considered to be relatively unhealthy.

The following table shows the association between the knowledge and practices on usage of healthy and unhealthy types of water bottles by the students.

**Table 4.15: Association between knowledge and practices on usage of healthy types of water bottles**

|                | Usage             |                   | Total               |
|----------------|-------------------|-------------------|---------------------|
|                | Unhealthy         | Healthy           |                     |
| Unsatisfactory | 56 (54.4%)        | 47 (45.6%)        | 103 (100.0%)        |
| Satisfactory   | 19 (45.2%)        | 23 (54.8%)        | 42 (100.0%)         |
| <b>Total</b>   | <b>75 (51.7%)</b> | <b>70 (48.3%)</b> | <b>145 (100.0%)</b> |

\* $\chi^2 = 0.996$ .  $p = 0.318$ ,  $df = 1$ .

Therefore there is no statistically significant association between knowledge and practices on usage of healthy types of water bottles. This shows that the usage of healthy types of water bottles among students does not depend on their knowledge.

## Chapter 5: Discussion

This research was carried out focusing on types of water bottles and their safety. Much research had been conducted internationally to assess the chemical substances emitted from water containers and their association to health. Those researches had revealed that substances like BPA, nonylphenols, phthalates and heavy metals etc. are leached causing serious illnesses like cancer, genotoxicity, infertility and endocrine disruptions. (Wetherill et al., 2007; Rosales J.E.L. et al., 2004; James E. Cooper et al., 2011; Montuori et al., 2008)

But so far, any research regarding this matter has not been conducted in Sri Lanka. Therefore this research was an attempt to find the current situation of knowledge, attitudes and practices on different types of water bottles among Sri Lankan population, so that this gap could be filled and suggestions could be made for relevant implementations in the future.

This study was conducted among Ordinary Level students of two selected schools in Colombo to assess their knowledge, attitudes and practices on types of water bottles consumed by them. Data was collected using a self administered questionnaire and through direct observation by the investigators. A total of 243 students participated in the study.

The proportions of students who were using healthy and unhealthy bottles were nearly equal. Among the students who were using unhealthy bottles, majority were unaware of it and their bad effects. Eventhough they comprised of half of the sample, when the health effects are considered this cannot be neglected. Reasons for this unawareness could be the lack of attention and concern paid on this matter by Sri Lankan community which was clearly manifested by unavailability of researches. According to international literature, a mixture of plastic derived compounds, BPA and phthalates, can promote epigenetic transgenerational inheritance of adult onset disease (Manikkam et al., 2013). Among the plastic bottles used by students there were many bottles in which a resin number had not been marked. So we could not comment about safety of those. The plastic containers available in the market which are used to carry water has to be marked with their resin number.

One of the key findings was the absence of a statistically significant association between knowledge and practices on usage of healthy types of water bottles. This shows

that even though they had the relevant knowledge, they were still using unhealthy bottles. There could be several reasons for not applying the knowledge to practical situations. One of them can be the lack of emphasis on harmful effects. Also, as they are long term effects on health, it is natural that people do not pay much attention to them.

As shown by results based on the attitudes majority of the students considered the constituent material of the bottle rather than its price, brand or appearance. This is one of the positive results we came across. But although they had good attitudes, their lack of knowledge had made them buy an unhealthy water bottle. So we can assume that if they were provided with adequate knowledge, they would improve their practices on usage of water bottles.

**Strengths and limitations :** To conduct this study we selected two major schools in Colombo. We expanded our socio-demographic variation of the sample by involving both genders in our study. But due to their academic activities in the school we had to limit our study sample size, but it would have been better if we had the opportunity to expand it.

We formed a self administered questionnaire to collect data because the sample size was large and also the whole study sample was able to fill it out. As we got much support from both schools we managed to get the questionnaires filled by the students in a limited time. The results would have been much more reliable if the questionnaires were filled on the interviewer administrated basis. Anyway data was collected from a larger sample in a limited time.

We analysed the data using SPSS software so it was done in a limited time with less effort. As a group we had a good team spirit and were supportive to each other. Because of that we achieved our goals within the given time with fewer difficulties. We should also be thankful to the Department of Community Medicine , Faculty of Medicine Colombo, for helping us in many ways.

**Implications :** Since there is lack of awareness and knowledge among people on selecting a safe water bottle, for long term use, effective measures to prevent any harmful utilization in the future should be planned. We believe more research has to be carried out on types of water containers consumed by Sri Lankan population and the disease conditions associated with them. Based on research evidence, standards and regulations should be formulated and implemented by the relevant authorities. People also should improve their knowledge and attitudes on this matter.

**Further work :** We conducted this research in a school population in an urban area. We suggest that it would be better if a research could be done on the same topic in a rural area among a different population. We studied only about water containers. We suggest to conduct a research regarding food containers also.

## **Chapter 6: Conclusions & Recommendations**

In our study population which consisted of 110 females and 133 males, 176 were 15 years old while others were 16 years. Majority of them were Sinhala Buddhists from Colombo district. Almost all of their parents were literate while majority of them had received tertiary education.

The knowledge regarding the water bottles and their safety was normally distributed in the sample. But the knowledge among a majority of students was unsatisfactory.

Most of the students had good attitudes regarding the selection of a safe water bottle. But only a minority had good attitudes on discarding the water bottle. The lack of knowledge regarding this matter was shown by the practices on usage of water bottles because nearly a half of the population was using harmful types of bottles in a harmful manner unknowingly. Eventhough they had good attitudes regarding healthy water bottles their practice was poor.

### **Recommendations**

This research was done to assess the knowledge, attitudes and practices on usage of different types of water bottles by Ordinary Level students. As shown in the conclusions above although the knowledge on the usage of water bottles in a majority was unsatisfactory and their practices in this regard were also poor. As mentioned in previous chapters, even though this matter has not gained much attention in the society, it has become a major issue when its long term effects are considered. So it is recommended that more attention should be paid regarding this matter to provide knowledge and to build good attitudes and practices on usage of healthy water bottles in the population.

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## **Annexure 01: Questionnaire - English**

### **Questionnaire**

Version 1.0 (08.01.2018)

#### **Research on knowledge, attitudes and practices on types of water bottles consumed by ordinary level students of two selected schools**

Dear Students,

We are third year medical students of Faculty of Medicine, Colombo, conducting a research under the above topic to analyse the knowledge, attitudes and practices on types of water bottles consumed by ordinary level students. We conduct this study under the direct supervision of [REDACTED] Senior Lecturer, Faculty of Medicine, University of Colombo.

The following questionnaire will require approximately 20 minutes to complete. We would very much appreciate it, if you could please answer **ALL** the questions in this questionnaire. The information collected through this study instrument will be used for research purposes only. All information will be kept confidential. Every participants' anonymity will be respected. Therefore, **DO NOT** write your name on any paper of this questionnaire. Please answer all questions truthfully and honestly as the success of this will depend on the accuracy of the information given by you. Participation is strictly voluntary and you may refuse to participate at any time.

Thank you for taking the time to assist us in our educational endeavours. We hope that this knowledge would be used in future to establish a safe practice of water bottle in Sri Lanka. Completion and return of the questionnaire will indicate your willingness to participate in this study. If you require additional information or have questions, please contact us at the numbers listed below.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

Please tick (✓) off or enter the information in the relevant boxes provided.

### **Section 1 - Socio-demographic factors**

1. What is your age completed at last birthday ? .....
2. What is your sex?  
a) Male ☐                      b) Female ☐
3. What is your ethnicity?  
a) Sinhala ☐                      b) Tamil ☐                      c) Muslim ☐  
d) Burger ☐                      e) Other .....(mention)
4. What is your religion?  
a) Buddhism ☐                      b) Hindu ☐                      c) Islam ☐  
d) Catholic/Christianity ☐                      d) Other ..... (mention)
5. What is your district of home town? .....
6. What is your monthly household income?  
a) Below Rs.25,000 ☐  
b) Between Rs.25,000-50,000 ☐  
c) Between Rs.50,000-100,000 ☐  
d) Above Rs.100,000 ☐
7. What is the highest level of education your father has completed?  
a) No formal education ☐                      e) Diploma ☐  
b) Primary ☐                      f) Graduate ☐  
c) O/L ☐                      g) Post graduate ☐  
d) A/L ☐                      h) Other .....(mention)
8. What is the highest level of education your mother has completed?  
a) No formal education ☐                      e) Diploma ☐  
b) Primary ☐                      f) Graduate ☐  
c) O/L ☐                      g) Post graduate ☐  
d) A/L ☐                      h) Other .....(mention)

## **Section 2 - Knowledge about variety in types of water bottles**

### **Part A**

1. What are the materials you know of, that are used to make water bottles?:

*(tick if appropriate)*

- a) Plastic ☐  
b) Glass ☐  
c) Metal ☐  
d) Other *(please specify)* ☐

2. Can usage of bottles to carry water cause health related problems?

- a) Yes ☐ b) No ☐

*If the answer to question number 2 is Yes, answer the following question in the Part A.*

*If No, answer Part B.*

3. Rate each of the following item from 1 to 3, with 1 being most harmful to health and 3 being least harmful to health.

- a) Plastic ☐  
b) Glass ☐  
c) Metal ☐

### **Part B**

1. Have you seen a number enclosed in a triangle at the bottom of plastic water bottles before?

- a) Yes ☐ b) No ☐

*If the answer to question number 1 is Yes, answer the following questions in the Part B.*

*If No, answer Part C.*

2. Can there be a connection between the above mentioned number and the safety of the water bottle?

- a) Yes ☐ b) No ☐

*If the answer to question number 2 is Yes, answer the following questions in the Part B.  
If No, answer Part C.*

3. Which of the following is healthier?

- a) Bottles marked with higher numbers ☐
- b) Bottles marked with lower numbers ☐
- c) Bottles marked with some particular numbers .....(mention)

4. How many times/for how long, a water bottle marked with number 1 is suitable to use?

- a) Only once ☐
- b) Twice ☐
- c) Five times ☐
- d) A month ☐
- e) One month to 6 months ☐
- f) 6 months to 1 year ☐
- g) More than 1 year ☐

### **Part C**

1. Is carrying boiling (100°C) water in plastic bottles healthy?

- a) Yes ☐
- b) No ☐

### **Part D**

1. Which of the following can affect the safety of water contained in a metal bottle?

- a) Scratches outside of bottle ☐
- b) Scratches inside of bottle ☐
- c) Dents in the bottle ☐
- d) Temperature of the water ☐
- e) Nothing ☐

2. Do you know that there are different types of metals used to make water bottles?

- a) Yes ☐
- b) No ☐

If the answer to question number 2 is Yes, answer the following questions in the Part D.  
If No, answer Section 3.

3. What are the types of metal water bottles you know ? *(Tick the relevant answers)*

- a) Stainless steel ☐
- b) Aluminium ☐
- c) Other ..... *(mention)*

4. Out of the above types of metal water bottles, which one is healthier to use?

- a) Stainless steel ☐
- b) Aluminium ☐
- c) Other ..... *(mention)*

### **Section 3 - Attitudes towards maintaining the safety of the water bottle they use**

#### **Part A**

1. What are the factors that you consider when buying a water bottle? *(Rate the following factors from 1 to 7, where 1 being the most important and 7 being the least important. If there is a factor that you do not consider, mark 'X' in front of it.)*

- a) Trade name of the bottle ☐
- b) The material from which the bottle is made of ☐
- c) Price of the bottle ☐
- d) Capacity of the bottle ☐
- e) Durability of the bottle ☐
- f) Shape of the bottle ☐
- g) Colour of the bottle ☐

## Part B

Please tick (✓) the appropriate response for the following statements.

| Statement                                         | Strongly disagree | Disagree | Moderate | Agree | Strongly Agree |
|---------------------------------------------------|-------------------|----------|----------|-------|----------------|
| 1. Plastic water bottles are healthy              |                   |          |          |       |                |
| 2. Metal water bottles are healthy                |                   |          |          |       |                |
| 3. Glass water bottles are healthy                |                   |          |          |       |                |
| 4. Water bottles with good appearance are healthy |                   |          |          |       |                |
| 5. Expensive water bottles are healthy            |                   |          |          |       |                |

6. How do you discard your water bottle after using it?

- a) Burn ☐
- b) Bury ☐
- c) Put into a garbage bin ☐
- d) Use for other purposes ☐
- e) Other ☐

7. If you put the water bottle into a garbage bin, do you consider the Recycling the colour coding?

- a) Not at all ☐
- b) Sometimes ☐
- c) Most of the time ☐
- d) All the time ☐

## Section 4 - Practices on use of water bottles

### Part A

1. Do you carry a water bottle to school every day?

Yes ☐

No ☐

*If the answer to question number 1 is Yes, answer the following questions in the Part A (except question 5)*

*If No, answer for question 5.*

2. What is the type of water bottle you use?

a) Plastic ☐

b) Metal ☐

c) Glass ☐

d) Other ☐

3. For how long do you use your water bottle?

a) Less than a week ☐

b) A week ☐

c) A month ☐

d) 1 month to 6 months ☐

e) 6 months to 1 year ☐

f) More than 1 year ☐

4. Normally based on what reason you discard one bottle to change to a new one?

a) Because it is necessary to change the water bottle after some time ☐

b) If water bottle has been dented ☐

c) If water bottle has been scratched ☐

d) If water bottle has been discoloured ☐

e) Other reason ..... (mention)

5. How do you drink water while in the school

- a) I don't drink water while in the school ☐
- b) From the canteen ☐
- c) From a water tap in school garden ☐
- d) From a friend's bottle ☐
- e) Other ☐

## Annexure 02: Questionnaire - Sinhala

### ජර්ශ්නාවලිය

අනුවාදය 1.0 (08.01.2018)

තෝරාගත් පාසල් දෙකක සාමාන්‍ය පෙළ සිසුන් විසින් භාවිතා කරනු ලබන ජල බෝතල් වර්ග සම්බන්ධව දැනුම, ආකල්ප හා භාවිතය පිළිබඳ පර්යේෂණය

ශිෂ්‍යයින්,

අප කොළඹ වෛද්‍ය පීඨයේ තුන්වන වසරේ වෛද්‍ය ශිෂ්‍යයින් වන අතර සාමාන්‍ය පෙළ සිසුන් විසින් භාවිතයට ගන්නා ජල බෝතල් වර්ග පිළිබඳ දැනුම, ආකල්ප සහ පිළිවෙත් විශ්ලේෂණය කිරීම සඳහා ඉහත මාතෘකාව යටතේ පර්යේෂණයක් සිදු කරන්නෙමු. කොළඹ විශ්වවිද්‍යාලයේ වෛද්‍ය පීඨයේ, ජ්‍යෙෂ්ඨ කටිකාවාරිය [REDACTED] මහතාගේ සෘජු අධීක්ෂණය යටතේ මෙම අධ්‍යයනය සිදු කෙරේ.

පහත ජර්ශ්නාවලිය සම්පූර්ණ කිරීමට විනාඩි 20 ක් පමණ අවශ්‍ය වේ. මෙම ජර්ශ්නාවලියෙහි ඇති සියලුම ජර්ශ්නවලට ඔබට පිළිතුරු සැපයිය හැකි නම් අප අගය කරන්නෙමු. මෙම අධ්‍යයන මෙවලම මගින් රැස් කරන තොරතුරු පර්යේෂණ කටයුතු සඳහා පමණක් යොදා ගනියි. සියලුම තොරතුරු රහසිගතව තබනු ඇත. සෑම සහභාගිවන්නාගේම නිර්නාමික භාවය සුරකිනු ලැබේ. එමනිසා, මෙම ජර්ශ්නාවලියෙහි කොතැනක හෝ ඔබගේ නම සඳහන් නොකරන්න. කරුණාකර සත්‍යය හා අවංකව පිළිතුරු දීමට කටයුතු කරන්න. මෙහි සාර්ථකත්වය ඔබ විසින් ලබාදුන් තොරතුරුවල නිරවද්‍යතාවය මත රඳා පවතී. සහභාගිවීම ස්වේච්ඡාවෙන් සිදු වන අතර ඔබට ඕනෑම අවස්ථාවක සහභාගි වීම ජර්නික්ෂේප කළ හැකිය.

අපගේ අධ්‍යයන කටයුතුවලට අපට සහාය වීමට කාලය වැය කළ ඔබට ස්තූතියි. ශ්‍රී ලංකාව තුළ ජල බෝතල්වල සෞඛ්‍යාරක්ෂිතභාවය පිළිබඳ නව නීති රෙගුලාසි ස්ථාපනය කිරීම සඳහා මෙම දැනුම යොදා ගනු ඇතැයි අපි බලාපොරොත්තු වෙමු. ජර්ශ්නාවලිය සම්පූර්ණ කර නැවත භාරදීම මගින් මෙම අධ්‍යයනයට සහභාගි වීමට ඔබ දක්වන කැමැත්ත පෙන්නුම් කෙරේ. ඔබට අතිරේක තොරතුරු අවශ්‍ය නම් හෝ ජර්ශ්න නිබේ නම් කරුණාකර පහත සඳහන් කර ඇති අංකවලින් අප අමතා විමසන්න.

.

මෙයට විශ්වාසී ,

[REDACTED]  
[REDACTED]  
[REDACTED]

කරුණාකර පහත සපයා ඇති ප්රශ්නවලට අදාළ කොටුවල හරි ලකුණ (✓) හෝ අදාළ පිළිතුර ඇතුළත් කරන්න.

## 1 කාණ්ඩය - සමාජීය ජනවිකාශය පිළිබඳ ප්රශ්නාවලිය

1. ඔබගේ වයස කීයද ? (අවසාන උපන් දිනයට සම්පූර්ණ කළ) .....
2. ඔබේ ස්ත්‍රී පුරුෂ භාවය කුමක්ද?
  - a) ස්ත්‍රී ☐
  - b) පුරුෂ ☐
3. ඔබගේ ජාතිය කුමක්ද?
  - a) සිංහල ☐
  - b) දෙමළ ☐
  - c) මුස්ලිම් ☐
  - d) බර්ගර් ☐
  - e) වෙනත් .....(සඳහන් කරන්න)
4. ඔබේ ආගම කුමක්ද?
  - a) බුද්ධාගම ☐
  - b) හින්දු ☐
  - c) ඉස්ලාම් ☐
  - d) කතෝලික / ක්‍රිස්තියානි ☐
  - e) වෙනත් ..... (සඳහන් කරන්න)
5. ඔබගේ දිස්ත්‍රික්කය කුමක්ද ? .....
6. ඔබේ පවුලේ මාසික ආදායම කොපමණද?
  - a) රුපියල් 25,000 ට අඩුයි ☐
  - b) රුපියල් 25,000-50,000 අතර ☐
  - c) රුපියල් 50,000-100,000 අතර ☐
  - d) රුපියල් 100,000 ට වැඩි ☐
7. ඔබේ පියා සම්පූර්ණ කර ඇති ඉහළම අධ්‍යාපන මට්ටම කුමක්ද?
  - a) විධිමත් අධ්‍යාපනයක් ලබා නොමැත ☐
  - e) ඩිප්ලෝමා ☐
  - b) ප්‍රාථමික ☐
  - f) උපාධිධාරී ☐
  - c) සාමාන්‍ය පෙළ ☐
  - g) පශ්චාත් උපාධිධාරී ☐
  - d) උසස් පෙළ ☐
  - h) වෙනත් ..... ..(සඳහන් කරන්න)

8. ඔබේ මව සම්පූර්ණ කර ඇති ඉහළම අධ්‍යාපන මට්ටම කුමක්ද?

- |                                  |                          |                      |                          |
|----------------------------------|--------------------------|----------------------|--------------------------|
| a) විධිමත් අධ්‍යාපනයක් ලබා නොමැත | <input type="checkbox"/> | e) ඩිප්ලෝමා          | <input type="checkbox"/> |
| b) ප්‍රාථමික                     | <input type="checkbox"/> | f) උපාධිධාරී         | <input type="checkbox"/> |
| c) සාමාන්‍ය පෙළ                  | <input type="checkbox"/> | g) පශ්චාත් උපාධිධාරී | <input type="checkbox"/> |
| d) උසස් පෙළ                      | <input type="checkbox"/> | h) වෙනත් .....       | ..(සඳහන් කරන්න)          |

## 2 කාණ්ඩය - විවිධ ජල බෝතල් වර්ග පිළිබඳ දැනුම

### A කොටස

1. වතුර බෝතල් සෑදීමට භාවිතා කරන ද්රව්‍ය මොනවාද ? (පිළිතුරු එකකට වඩා ලබාදිය හැකිය.)

- a) ප්ලාස්ටික් ☐
- b) වීදුරු ☐
- c) ලෝහ ☐
- d) වෙනත් ..... (සඳහන් කරන්න)

2. ජලය රැගෙන යාමට භාවිතා කරන බෝතල් මගින් සෞඛ්‍යයට අහිතකර ප්රතිපල ඇති විය හැකිද?

- a) ඔව් ☐
- b) නැත ☐

2 වන ප්රශ්නය සඳහා පිළිතුර ඔව් නම්, A කොටසෙහි පහත ප්රශ්නයට පිළිතුරු සපයන්න.  
පිළිතුර නැත නම්, B කොටසට පිළිතුරු සපයන්න.

3. සිදු විය හැකි උපරිම භාතිය 1 හා අවම භාතිය 4 ලෙස ගෙන පහත ඒවා ශ්රේණි ගත කරන්න

- a) ප්ලාස්ටික් ☐
- b) වීදුරු ☐
- c) ලෝහ ☐
- d) වෙනත් ☐

## B කොටස

1. ඔබ මීට පෙර ප්ලාස්ටික් ප්ල බෝතල්වල පතුලේ තර්කෝණයක් තුළ සඳහන් කර ඇති අංකයක් දැක තිබේද?

a) ඔව් ☐

b) නැත ☐

1 වන ප්රශ්නය සඳහා පිළිතුර ඔව් නම්, B කොටසෙහි ඉතුරු ප්රශ්නවලට පිළිතුරු සපයන්න.  
පිළිතුර නැත නම්, C කොටසට පිළිතුරු සපයන්න.

2. ඉහත සඳහන් අංකය හා ප්ල බෝතලයේ සෞඛ්‍යාරක්ෂිතභාවය අතර සම්බන්ධතාවක් තිබිය හැකිද?

a) ඔව් ☐

b) නැත ☐

2 වන ප්රශ්නය සඳහා පිළිතුර ඔව් නම්, B කොටසෙහි ඉතුරු ප්රශ්නවලට පිළිතුරු සපයන්න.  
පිළිතුර නැත නම්, C කොටසට පිළිතුරු සපයන්න.

3. පහත සඳහන් ඒවා අතරින් වඩාත් සෞඛ්‍යාරක්ෂිත වන්නේ කුමක්ද?

a) ඉහළ අංක සලකුණු කර ඇති බෝතල් ☐

b) පහළ අංක සලකුණු කර ඇති බෝතල් ☐

c) යම් විශේෂිත අංකයක් සලකුණු කරන ලද බෝතල් ..... (සඳහන් කරන්න)

4. අංක 1 සලකුණු කර ඇති ප්ල බෝතලයක් කොපමණ වාර ගණනක් / කොපමණ කාලයක් භාවිතා කිරීමට සුදුසු ද?

a) එක් වරක් පමණි ☐

b) දෙවරක් ☐

c) පස් වතාවක් ☐

d) මාසයක් ☐

e) මාසයක් සිට මාස 6 දක්වා ☐

f) මාස 6 සිට වසර 1 දක්වා ☐

g) වසර 1 කට වඩා ☐

## C කොටස

1. ප්ලාස්ටික් බෝතල්වල උණු කරන ලද ( $100^{\circ}\text{C}$ ) ප්ලය රැගෙන යාම සෞඛ්‍යාරක්ෂිතද?

a) ඔව් ☐

b) නැත ☐

## D කොටස

1. ලෝහ බෝතලයක අඩංගු ජලයේ සුරක්ෂිතතාවට පහත සඳහන් කුමකින් බලපෑම්ද සිදුවන්නේද? (පිළිතුරු එකකට වඩා ලබාදිය හැකිය.)

- a) බෝතලයේ පිටත ඇති සිරිම් ☐
- b) බෝතලයේ ඇතුළත ඇති සිරිම් ☐
- c) බෝතලයේ ඇති තැලීම් ☐
- d) ජලයෙහි උෂ්ණත්වය ☐
- e) කිසිවක් නැත ☐

2. ලෝහ වතුර බෝතල් නිෂ්පාදනයට විවිධ ලෝහ වර්ග භාවිතා කරන ඔබ දන්නවාද?

- a) ඔව් ☐
- b) නැත ☐

2 වන ජර්ශනය සඳහා පිළිතුර ඔව් නම්, D කොටසෙහි ඉතුරු ජර්ශනවලට පිළිතුරු සපයන්න.

පිළිතුර නැත නම්, 3 කාණ්ඩයේ ජර්ශනවලට පිළිතුරු සපයන්න.

3. ඔබ දන්නා ලෝහ වතුර බෝතල් වර්ග මොනවාද? (පිළිතුරු එකකට වඩා ලබාදිය හැකිය.)

- a) මල නොබැඳෙන වානේ ☐
- b) ඇලුමිනියම් ☐
- c) වෙනත් ..... (සඳහන් කරන්න)

4. ඉහත සඳහන් වර්ගවල ලෝහ වතුර බෝතල් අතුරෙන් වඩා සෞඛ්‍යාරක්ෂිත කුමන වර්ගයද?

- a) මල නොබැඳෙන වානේ ☐
- b) ඇලුමිනියම් ☐
- c) වෙනත් ..... (සඳහන් කරන්න)

### 3 කාණ්ඩය - භාවිතා කරන ජල බෝතලයේ සෞඛ්‍යාරක්ෂිතභාවය පවත්වාගෙන

#### යාම පිළිබඳ ආකල්ප

#### A කොටස

1. ඔබ වතුර බෝතලයක් මිලදී ගැනීමේදී සලකා බලන සාධක මොනවාද? (පහත දැක්වෙන සාධක ඉදිරියෙන්, වඩාත්ම වැදගත් වන සාධකයට 1 ද, අඩුවෙන්ම වැදගත් වන සාධකයට 8 ද, වන ලෙස, 1 සිට 8 දක්වා අංක කරන්න. ඔබ සැලකිල්ලට නොගන්නා කරුණක් තිබේ නම්, එය ඉදිරියෙහි X සලකුණු කරන්න.)

- a) බෝතලයේ වෙළඳ නාමය ☐
- b) බෝතලය සාදා ඇති ද්රව්‍යය ☐
- c) බෝතලයේ මිල ☐
- d) බෝතලයෙහි ධාරිතාව ☐
- e) බෝතලයෙහි කල්පැවැත්ම ☐
- f) බෝතලයේ හැඩය ☐
- g) බෝතලයේ වර්ණය ☐

#### B කොටස

පහත සඳහන් ජරකාශ සඳහා සුදුසු ජරනිවාර ඉදිරියේ (✓) ලකුණ යොදන්න.

| ජරකාශය                                              | කිසිසේත්<br>එකඟ<br>නොවෙමි | එකඟ<br>නොවෙමි | මධ්‍යස්ථ<br>යි | එකඟ<br>වෙමි | දැඩි<br>ලෙස එකඟ<br>වෙමි |
|-----------------------------------------------------|---------------------------|---------------|----------------|-------------|-------------------------|
| 1.ප්ලාස්ටික් ජල බෝතල් සෞඛ්‍ය<br>සම්පන්න වේ          |                           |               |                |             |                         |
| 2.ලෝහ ජල බෝතල් සෞඛ්‍ය<br>සම්පන්නයි.                 |                           |               |                |             |                         |
| 3. වීදුරු වතුර බෝතල් සෞඛ්‍ය<br>සම්පන්නයි.           |                           |               |                |             |                         |
| 4.හොඳ පෙනුමක් සහිත වතුර බෝතල්<br>සෞඛ්‍ය සම්පන්න වේ. |                           |               |                |             |                         |
| 5. මිල අධික වතුර බෝතල් සෞඛ්‍ය<br>සම්පන්න වේ.        |                           |               |                |             |                         |

6. ඔබේ චතුර බෝතලය භාවිතයෙන් ඉවත් කරන්නේ කෙසේද? (පිළිතුරු එකකට වඩා ලබාදිය හැකිය.)

- a) පුළුස්සා දැමීමෙන් ☐
- b) පොළොවේ වැළලීමෙන් ☐
- c) කසළ බඳුනකට දැමීමෙන් ☐
- d) වෙනත් අරමුණු සඳහා භාවිතා කිරීමෙන් ☐
- e) වෙනත් ☐

7. ඔබ චතුර බෝතලය කසළ බඳුනකට දමන්නේ නම්, ජර්නිවක්රීකරණය සඳහා වූ වර්ණ ගැන් සලකා බලන්නේද?

- a) එසේ නැත ☐
- b) සමහර අවස්ථා වල ☐
- c) බොහෝ අවස්ථා වල ☐
- d) සැමවිටම ☐

#### 4 කාණ්ඩය - ජල බෝතල් භාවිතය

##### **A කොටස**

1. ඔබ දිනපතා පාසැලට චතුර බෝතලයක් රැගෙන යනවාද?

- a) ඔව් ☐
- b) නෑ ☐

ජර්ශ්න අංක 1 ට පිළිතුර ඔව් නම්, A කොටසේ පහත සඳහන් ජර්ශ්නවලට පිළිතුරු සපයන්න (ජර්ශ්න අංක 5 ට හැර).

පිළිතුර නැත නම් ජර්ශ්න අංක 5 ට පිළිතුරු සපයන්න.

2. ඔබ නිතරම භාවිතා කරන ජල බෝතල් වර්ගය කුමක්ද?

- a) ප්ලාස්ටික් ☐
- b) ලෝහ ☐
- c) වීදුරු ☐
- d) වෙනත් ..... (සඳහන් කරන්න)

3. කොපමණ කාලයක් ඔබ වතුර බෝතලය භාවිතා කරන්නේද ?

- a) සතියකට වඩා අඩුය ☐
- b) සතියක් ☐
- c) මාසයක් ☐
- d) මාස 1 සිට මාස 6 දක්වා ☐
- e) මාස 6 සිට වසර 1 දක්වා ☐
- f) වසර 1 කට වඩා ☐

4. සාමාන්‍යයෙන් ඔබ එක් බෝතලයක් භාවිතයෙන් ඉවත් කර නව බෝතලයක් භාවිතයට ගැනීමට හේතුව කුමක්ද? (පිළිතුරු එකකට වඩා ලබාදිය හැකිය.)

- a) වතුර බෝතලයක් යම් කාලයක් තුළ වෙනස් කිරීමට අත්‍යවශ්‍ය බැවිනි. ☐
- b) වතුර බෝතලය ඇතුළට එබී තිබේ නම් ☐
- c) වතුර බෝතලය සිරීමට ලක් වී තිබේ නම් ☐
- d) වතුර බෝතලය අවර්ණ වී තිබේ නම් ☐
- e) වෙනත් හේතු ..... (සඳහන් කරන්න)

5. පාසැලේදී ඔබ ජලය පානය කරන්නේ කෙසේද?

- a) පාසැලේදී මම ජලය පානය නොකරමි ☐
- b) ආපනශාලාවෙන් ☐
- c) පාසල් වත්තේ ජල කරාමයකින් ☐
- d) මිතුරෙකුගේ බෝතලයකින් ☐
- e) වෙනත් ..... (සඳහන් කරන්න)

## Annexure 03: Questionnaire - Tamil

### கேள்விப் பத்திரம்

பதிப்பு 1.0 (08.01.2018)

**தேர்வு செய்யப்பட்ட இரு பாடசாலைகளின் சாதாரண தர மாணவர்களால்  
பயன்படுத்தப்படும் தண்ணீர்ப் போத்தல்கள் பற்றிய அறிவு, நடைமுறை  
மற்றும் பழக்கவழக்கங்கள் பற்றிய ஆய்வு**

அன்பின் மாணவர்களே,

கொழும்பு மருத்துவ பீட மூன்றாம் வருட மாணவர்களான நாம், சாதாரண தர மாணவர்களிடையே பயன்படுத்தப்படும் தண்ணீர்ப் போத்தல்கள் பற்றிய அறிவு, நடைமுறைகள் மற்றும் பழக்கவழக்கங்கள் பற்றி ஆராய்வதற்காக மேற்கூறிய தலைப்பிலான ஆய்வினை மேற்கொள்கிறோம். நாம் இவ் ஆய்வினைக் கொழும்பு மருத்துவ பீடத்தின் கொழும்பு மருத்துவ பீட விரிவுரையாளர் வைத்தியகலாநிதி [REDACTED] அவர்களின் நேரடிக் கண்காணிப்பின் கீழ் மேற்கொள்கிறோம்.

கீழுள்ள கேள்விப் பத்திரம் கிட்டத்தட்ட 20 நிமிடங்களில் நிரப்பப்படக் கூடியது. இவ் எல்லா வினாக்களுக்கும் நீங்கள் விடையளிப்பதை நாம் பெரிதும் வரவேற்கிறோம். இதன் மூலம் சேகரிக்கப்படும் தரவுகள் இவ் ஆய்வுக்கு மட்டுமே பயன்படுத்தப்படும். எல்லாத் தகவல்களினதும் இரகசியத் தன்மை பேணப்படும். பங்குபற்றுபவர்கள் பற்றிய இரகசியத் தன்மை பேணப்படும். எனவே இத் தாள்கள் எவற்றிலும் உங்களது பெயர்களை எழுத வேண்டாம். நீங்கள் வழங்கும் தகவல்களிலேயே இவ் ஆய்வின் திருத்தம் தங்கியிருப்பதால் தயவு செய்து அனைத்துக் கேள்விகளுக்கும் உண்மையாகவும், நேர்மையாகவும் பதிலளிக்கவும். பங்குபற்றலானது முழுமையாக உங்கள் விருப்பத்தின்படியிலானது, எந்த சந்தர்ப்பத்திலும் நீங்கள் பங்குபற்றுவதிலிருந்து விலகிக் கொள்ளலாம்.

எங்களது இக் கல்விசார் செயற்பாட்டுக்கு வழங்கும் உங்கள் ஒத்துழைப்புக்கு நன்றி. குடிநீர்ப் போத்தல்கள் பற்றிய இவ் அறிவானது எதிர்காலத்தில் பாதுகாப்பான குடிநீர்ப் போத்தல் பாவனையை இலங்கையில் ஏற்படுத்த உதவும் என எதிர்பார்க்கிறோம். இப்படிவத்தைப் பூரணப்படுத்தி வழங்குதல் இவ் ஆய்வில் பங்கு பற்றுவதற்கான உமது விருப்பத்தைத் தெரிவிக்கின்றது. இது பற்றி ஏதேனும் கேள்விகளுக்கும், மேலதிக தகவல்களுக்கும் கீழ்வரும் இலக்கங்களைத் தொடர்பு கொள்ளலாம்.

இப்படிக்கு,

[REDACTED]  
[REDACTED]  
[REDACTED]

(✓) அடையாளமிடுக அல்லது பொருத்தமான பதிலினை எழுதுக

### தொகுதி 1 - சமூக மக்கள் காரணிகள்

9. கடந்த பிறந்த தினத்துடன் உமக்கு எத்தனை வயது பூர்த்தியாகிறது?.....

10. உமது பால்?

டி) ஆண் ☐ டி) பெண் ☐

11. உமது இனம்?

டி) சிங்களம் ☐ டி) தமிழ் ☐ உ) முஸ்லிம் ☐  
ன) பறங்கியர் ☐ ந) வேறு .....(குறிப்பிடுக)

12. உமது மதம்?

டி) பௌத்தம் ☐ டி) இந்து ☐ உ) ☐  
இஸ்லாம் ☐

ன) கிறிஸ்தவம். கத்தோலிக்கம் ன) வேறு ..... (குறிப்பிடுக)

13. உமது ஊர் அமைந்துள்ள மாவட்டம்? .....

14. உங்களது மாதாந்த குடும்ப வருமானம்?

ந) சும.25இ000 இற்கு கீழ் ☐  
க) Rs.25இ000-50இ000 ☐  
ப) Rs.50இ000-100இ000 ☐  
ா) Rs.100இ000 இற்கு மேல் ☐

15. உமது தந்தையின் அதிகூடிய கல்வித் தரம்?

ந) முறையான கல்வி இல்லை ☐ ந) டிப்ளோமா ☐  
க) ஆரம்பக் கல்வி ☐ க) பட்டதாரி ☐  
ப) மு.ந் ☐ ப) மீளவ பசயனர ☐  
ா) யு.ந் ☐ ா) வேறு ☐

.....(குறிப்பிடுக)

16. உமது தாயின் அதிகூடிய கல்வித் தரம்?

ந) முறையான கல்வி இல்லை ☐ ந) டிப்ளோமா ☐  
க) ஆரம்பக் கல்வி ☐ க) பட்டதாரி ☐  
ப) மு.ந் ☐ ப) மீளவ பசயனர ☐  
ா) யு.ந் ☐ ா) வேறு ☐

.....(குறிப்பிடுக)

## பகுதி 2 – தண்ணீர்ப் போத்தல்களின் வகைகள் சம்பந்தமான அறிவு

### பகுதி யு

3. உங்களுக்குத் தெரிந்த தண்ணீர்ப் போத்தல்கள் தயாரிக்கப் பயன்படுத்தும் பதார்த்தங்கள்?: (பொருத்தமானவற்றை அடையாளமிடுக)

ந) பிளாஸ்டிக்

☐

க) கண்ணாடி

☐

ப) உலோகம்

☐

ர) வேறு (குறிப்பிடுக)

☐

4. தண்ணீர்ப் போத்தல்களின் பாவனையால் சுகாதாரப் பிரச்சினைகள் ஏற்படலாமா?

டி) ஆம் ☐

டி) இல்லை ☐

2 ஆம் கேள்விக்குரிய விடை ஆம் எனின் பகுதி அ இன் ஏனைய கேள்விகளுக்கும், இல்லை எனின் பகுதி ஆ இற்கும் விடையளிக்க.

3. பின்வருவனவற்றுக்கு 1 முதல் 3 வரை இலக்கமிடுகஇ உடல் நலத்திற்கு அதிக ஆபத்தானதற்கு 1உம், குறைந்ததற்கு 3உம் வருமாறு.

ன) பிளாஸ்டிக்

☐

ந) கண்ணாடி

☐

க) உலோகம்

☐

### பகுதி டி

5. தண்ணீர்ப் போத்தல்களின் அடியில் இலக்கமொன்றை உள்ளடக்கிய முக்கோணமொன்றை அவதானித்திருக்கிறீர்களா?

டி) ஆம் ☐

டி) இல்லை ☐

1 ஆம் கேள்விக்குரிய விடை ஆம் எனின் பகுதி டி இன் ஏனைய கேள்விகளுக்கும், இல்லை எனின் பகுதி ஊ இற்கு விடையளிக்க.

6. இந்த இலக்கத்துக்கும் போத்தலின் பாவனையின் பாதுகாப்புத் தன்மைக்கும் ஏதேனும் தொடர்பு இருக்க முடியுமா?

டி) ஆம் ☐

டி) இல்லை ☐

2 ஆம் கேள்விக்குரிய விடை ஆம் எனின் பகுதி டி இன் ஏனைய கேள்விகளுக்கும், இல்லை எனின் பகுதி ஊ இற்கு விடையளிக்க.

7. பின்வருவனவற்றுள் எது பாதுகாப்பானது?

ன) பெரிய இலக்கத்துடனான போத்தல்

☐

ந) சிறிய இலக்கத்துடனான போத்தல்

☐

க) குறித்த சில இலக்கங்களுடனான போத்தல்கள்.....(குறிப்பிடுக)

8. இலக்கம் 1 குறிக்கப்பட்டுள்ள போத்தல் எத்தனை தடவை. எவ்வளவு காலம் பயன்படுத்த உகந்தவை?

ா) ஒரு முறை மட்டும்

☐

ை) இரு தடவைகள்

☐

த) ஐந்து தடவைகள்

☐

ம) ஒரு மாதம்

☐

ட) 1 – 6 மாதங்கள்

☐

அ) 6 மாதங்கள்- 1 வருடம்

☐

ெ) 1 வருடத்துக்கு மேல்

☐

**பகுதி ஊ**

2. கொதிக்கும் நீரினை (100<sup>டி</sup>ஊ) பிளாஸ்டிக் போத்தல்களில் இடுவது சுகாதாரமானதா?

டி) ஆம் ☐

டி) இல்லை ☐

**பகுதி னு**

5. பின்வருவனவற்றுள் எது உலோகத்தாலான போத்தலிலுள்ள நீரினைப் பாதிக்கும்?

க) போத்தலின் வெளிப்புறமாக உள்ள கீறல்கள்

☐

ப) போத்தலின் உட்புறமாக உள்ள கீறல்கள்

☐

ா) போத்தலிலுள்ள தவாளிப்புக்கள்

☐

ை) வெப்பநிலை

☐

த) எதுவுமன்று

☐

6. தண்ணீர்ப் போத்தல் தயாரிக்கப் பயன்படுத்தும் உலோகங்கள் எவை என அறிவீர்களா?

டி) ஆம் ☐

டி) இல்லை ☐

2 ஆம் கேள்விக்குரிய விடை ஆம் எனின் பகுதி னு இன் ஏனைய கேள்விகளுக்கும், இல்லை எனின் தொகுதி 3 இற்கும் விடையளிக்க.

7. உங்களுக்குத் தெரிந்த உலோகப் போத்தல் வகைகள் எவை? (பொருத்தமான விடையை அடையாளமிடுக)

ன) கறையில் உருக்கு

☐

ந) அலுமினியம்

☐

க) வேறு .....(குறிப்பிடுக)

8. மேற்குறிப்பிட்டவற்றுள் எவை பயன்பாட்டிற்கு பாதுகாப்பானவை?

ன) கறையில் உருக்கு

☐

ந) அலுமினியம்

☐

க) வேறு .....(குறிப்பிடுக)

### தொகுதி 3 - தாம் பயன்படுத்தும் தண்ணீர்ப் போத்தலினைப்

#### பாதுகாப்பானதாகப் பேணுவதற்கான நடத்தைகள்

பகுதி யு

2. தண்ணீர்ப் போத்தலொன்றை வாங்கும் போது நீங்கள் கருத்திற் கொள்ளும் காரணிகள் யாவை? (பின்வருவனவற்றை 1 – 7 இலக்கமிடுக,மிக முக்கியமானதாகக் கருதுவதற்கு 1 உம், மிகக் குறைந்தது 7 உம் ஆக அமையுமாறு. கருத்திற் கொள்ள வேண்டியதில்லை என நினைப்பவற்றுக்கு '0' அடையாளமிடுக.)

ா) போத்தலின் வர்த்தகப் பெயர்

☐

ை) போத்தல் ஆக்கப்பட்டுள்ள பதார்த்தம்

☐

த) போத்தலின் விலை

☐

ம) போத்தலின் கொள்ளளவு

☐

ட) போத்தலின் பாவனைக் காலம்

☐

அ) போத்தலின் வடிவம்

☐

ெ) போத்தலின் நிறம்

☐

பகுதி ௨

பொருத்தமான விடைக்கு (✓) அடையாளமிடுக.

| அறிக்கை                                                      | உறுதியாக<br>மறுக்கிறே<br>றன | மறுக்கிறே<br>றன | நடுநிலை<br>ம | ஆமோதி<br>க்கிறேன | உறுதியாக<br>ஆமோதி<br>க்கிறேன |
|--------------------------------------------------------------|-----------------------------|-----------------|--------------|------------------|------------------------------|
| 1. பிளாஸ்டிக் தண்ணீர்ப்<br>போத்தல்கள்<br>ஆரோக்கியமானவை.      |                             |                 |              |                  |                              |
| 2. உலோகத் தண்ணீர்ப்<br>போத்தல்கள் ஆரோக்கியமானவை              |                             |                 |              |                  |                              |
| 3. கண்ணாடித் தண்ணீர்ப்<br>போத்தல்கள் ஆரோக்கியமானவை           |                             |                 |              |                  |                              |
| 4. அழகிய தோற்றமுடைய<br>தண்ணீர்ப் போத்தல்கள்<br>ஆரோக்கியமானவை |                             |                 |              |                  |                              |
| 5. விலையுயர்ந்த தண்ணீர்ப்<br>போத்தல்கள் ஆரோக்கியமானவை        |                             |                 |              |                  |                              |

6. பாவனையின் பின் நீர் தண்ணீர்ப் போத்தல்களை எவ்வாறு அப்புறப்படுத்துவீர்?

- க) எரித்தல் ☐
- ப) புதைத்தல் ☐
- ா) குப்பைக் கூடையிலிடுதல் ☐
- ை) வேறு தேவைக்குப் பயன்படுத்தல் ☐
- த) வேறு ☐

7. நீங்கள் தண்ணீர்ப் போத்தலொன்றைக் குப்பைக் கூடையிலிடும் போது மீள்கழற்சி  
மற்றும் நிறக் குறியீடு பற்றிக் கவனமெடுக்கிறீரா?

ய) இல்லை ☐ டி) சில வேளைகளில் ☐

உ) அனேகமான வேளைகளில் ☐ ன) எப்போதும் ☐

**தொகுதி 4 - தண்ணீர்ப் போத்தல் பாவனையின் போதான  
பழக்கவழக்கங்கள்**

**பகுதி யு**

1. நீங்கள் தினமும் பாடசாலைக்குத் தண்ணீர்ப் போத்தல் கொண்டு செல்கிறீரா?

ஆம் ☐

இல்லை ☐

1 ஆம் கேள்விக்குரிய விடை ஆம் எனின் பகுதி யு இன் ஏனைய கேள்விகளுக்கும்,  
( 5 ஆம் கேள்வி தவிர)

இல்லை எனின் 5 ஆவது கேள்விக்கும் விடையளிக்க.

2. நீங்கள் எவ்வகையான தண்ணீர்ப் போத்தல் பாவிக்கிறீர்கள்?

ந) பிளாஸ்டிக்

☐

க) உலோகம்

☐

ப) கண்ணாடி

☐

ர) வேறு

☐

3. எவ்வளவு காலமாக அப்போத்தலைப் பயன்படுத்துகிறீர்கள்?

ப) ஒருவாரத்தை விடக் குறைவாக

☐

ர) ஒருவாரமாக

☐

ை) ஒரு வாரம்

☐

த) 1 – 6 மாதங்கள்

☐

ம) 6 மாதம் - 1 வருடம்

☐

ட) ஒரு வருடத்துக்கு மேல்

☐

4. சாதாரணமாக எக்காரணத்துக்காக நீங்கள் ஒரு போத்தலை அப்புறப்படுத்தி விட்டு  
புதியதொன்றை வாங்குவீர்கள்?

க) சிறிது காலத்தின் பின் போத்தலை மாற்றுவது அவசியம் என்பதால்

☐

ப) போத்தலில் தவாளிப்புக்கள் ஏற்பட்டால்

☐

ர) போத்தலில் கீறல்கள் ஏற்பட்டால்

☐

ை) போத்தல் நிறமாற்றம் அடைந்திருந்தால்

☐

த) வேறு..... (குறிப்பிடுக)

5. நீங்கள் பாடசாலையிலுள்ள போது எவ்வாறு நீர் அருந்துவீர்கள்?

க) நான் பாடசாலையிலுள்ள போது நீர் அருந்துவதில்லை

☐

ப) சிற்றுண்டிச் சாலையில்

☐

ர) பாடசாலைத் தோட்டத்திலுள்ள குழாயில்

☐

ை) நண்பரின் போத்தலில்

☐

த) வேறு

☐

#### Annexure 04: Direct Observation tool - English

##### Section 5 : Direct Observation

*This section will be filled by the researchers.*

1. Does the participant has a water bottle now?
2. Material - Plastic/Metal/Glass
3. Resin number - 1/2/3/4/5/6/7/not marked
4. Metal type - Aluminium / Stainless steel
5. Damages - Scratches inside/scratches outside/dents/Nothing

|                                          |         |  |       |  |       |  |
|------------------------------------------|---------|--|-------|--|-------|--|
| Does the student has a water bottle now? |         |  | Yes   |  | No    |  |
| Material                                 | Plastic |  | Metal |  | Glass |  |
| Resin number/Type                        |         |  |       |  |       |  |
| Damages                                  |         |  |       |  |       |  |

#### Annexure 05: Direct Observation tool - Sinhala

##### 5 කාණ්ඩය - සෘජු නිරීක්ෂණ

*මෙම කාණ්ඩය පර්යේෂකයන් විසින් පුරවනු ලබයි.*

6. ශිෂ්‍යයා සතුව මෙම අවස්ථාවේදී වතුර බෝතලයක් පවතියිද?
7. එසේනම්, එය සාදා ඇති ද්රව්‍යය - ප්ලාස්ටික්/ලෝහ/විදුරු
8. රෙසින් අංකය - 1/2/3/4/5/6/7/වෙනත්/සලකුණු කර නැත
9. ලෝහ වර්ගය - ඇලුමිනියම්/මල නොබැඳෙන වානේ
10. හානි - ඇතුළත සිරිම්/පිටත සිරිම්/තැලීම්/කිසිවක් නැත

|                                                    |            |  |     |  |        |  |
|----------------------------------------------------|------------|--|-----|--|--------|--|
| ශිෂ්‍යයා සතුව මෙම අවස්ථාවේදී වතුර බෝතලයක් පවතියිද? |            |  | ඔව් |  | නැත    |  |
| සාදා ඇති ද්රව්‍යය                                  | ප්ලාස්ටික් |  | ලෝහ |  | විදුරු |  |
| රෙසින් අංකය/ ලෝහ වර්ගය                             |            |  |     |  |        |  |
| හානි                                               |            |  |     |  |        |  |

## Annexure 06: Direct Observation tool - Tamil

### தொகுதி 5 - நேரடி கண்காணிப்பு

இத்தொகுதியானது ஆய்வாளர்களினால் பூரணப்படுத்தப்படும்.

11. ஆய்வில் பங்குபற்றியவர் தற்போது நீர் போத்தல் ஒன்றை வைத்துள்ளாரா?
12. மூலப்பொருள் - பிளாஸ்டிக். உலோகம். கண்ணாடி
13. ரெசின் இலக்கம் - 1. 2. 3. 4. 5. 6. 7. மற்ற. குறிப்பிடப்படவில்லை
14. உலோகத்தின் வகை – அலுமினியம் . துருப்பிடிக்காத இரும்பு
15. பாதிப்புக்கள் - உட்புறம் தேய்வுகள் . வெளிப்புறம் தேய்வுகள் . உருவம் சிதைக்கப்பட்டிருத்தல் . எதுவும் இல்லை

|                                                                 |            |  |        |     |         |       |  |
|-----------------------------------------------------------------|------------|--|--------|-----|---------|-------|--|
| ஆய்வில் பங்குபற்றியவர் தற்போது நீர் போத்தல் ஒன்றை வைத்துள்ளாரா? |            |  |        | ஆம் |         | இல்லை |  |
| மூலப்பொருள்                                                     | பிளாஸ்டிக் |  | உலோகம் |     | கண்ணாடி |       |  |
| ரெசின்<br>இலக்கம். வகை                                          |            |  |        |     |         |       |  |
| பாதிப்புக்கள்                                                   |            |  |        |     |         |       |  |

**Information Sheet**

Version 1.0 (08.01.2018)

**Research on knowledge, attitudes and practices on types of water bottles consumed by ordinary level students two selected schools**

**1. Introduction**

We, [REDACTED] are third year medical students of Faculty of Medicine, Colombo, conducting a research under the above topic to analyse the knowledge, attitudes and practices on types of water bottles consumed by ordinary level students. We conduct this study under the direct supervision of [REDACTED] Senior Lecturer, Faculty of Medicine, University of Colombo.

**2. Purpose**

We paid our attention on this topic because many researches have found that some types of water bottles in the market may leach harmful substances into the water and that can lead to cause many diseases like cancers. We also noticed that carrying water in bottles is more popular among school children. As the school children are the future of the country, it is our responsibility to take care of their health. We hope that this knowledge would be used in future to establish a safe practice of water bottles in Sri Lanka.

**3. Type of Research Intervention**

A questionnaire and direct observation of water bottles they carry.

**4. Selection of Participants**

We have chosen ordinary level students of two schools, one boys' school and one girls' school, in Colombo district for the study.

**5. Voluntary Participation**

Your decision on whether or not to have your child participate in this research is voluntary. If you agree, you can send your consent tomorrow with your child. Before you decide, you can talk to anyone you feel comfortable with.

## **6. Procedure**

Your daughter/son will fill out a questionnaire which will be provided and collected by us in the classroom. In the same time we will check your child's water bottle and note down some information about it.

## **7. Duration**

This may take about 20 minutes of time and we hope to do this during the interval.

## **8. Risks and Discomforts**

We hope that there will be no any discomfort to your child because we have not included any sensitive or too personal questions in our study.

## **9. Benefits**

There will be no immediate and direct benefit to your child or to you, but your child's participation is likely to help us find out more about the knowledge, attitudes and practices on types of water bottles in the population and we hope that these will help to get the attention of government health policy makers to take necessary actions to prevent any harm in the future.

## **10. Confidentiality**

Personal information of participants will not be collected. The information recorded is confidential, and no one else except us will have access to his/her questionnaire. The questionnaires will be destroyed after 1 year of time.

## **11. Reimbursements**

Participants would not be paid any amount of money for participation in this study.

## **12. Right to refuse or withdraw**

There will be no discomfort or discrimination for your child even if you decide not to allow your child to take part in this research study. Your child may stop participating in the study at any time that you or she/he wish without either of you losing any of your rights here.

### **13. Clarification**

If you have any questions you may ask them now or later, even after the study has started. If you wish to ask questions later, you may contact any of the following:

[REDACTED]

[REDACTED]

[REDACTED]

### **14. If you wish to participate in this study**

You have to completely read this information sheet and have to clearly understand the purpose, benefits and risks of this study before you consent to this study.

## Annexure 08: Information Sheet - Sinhala

### තොරතුරු පත්‍රිකාව

අනුවාදය 1.0 (08.01.2018)

තෝරාගත් පාසල් දෙකක සාමාන්‍ය පෙළ සිසුන් විසින් භාවිතා කරනු ලබන ජල බෝතල් වර්ග සම්බන්ධව දැනුම, ආකල්ප හා භාවිතය පිළිබඳ පර්යේෂණය

#### 1. හැඳින්වීම

[REDACTED] වන අප කොළඹ වෛද්‍ය පීඨයේ තුන්වන වසරේ වෛද්‍ය ශිෂ්‍යයින් වෙමු. අප විසින් සාමාන්‍ය පෙළ සිසුන් භාවිතා කරන ජල බෝතල් වර්ග සම්බන්ධව දැනුම, ආකල්ප හා භාවිතය විශ්ලේෂණය කිරීම සඳහා ඉහත මාතෘකාව යටතේ පර්යේෂණයක් සිදු කෙරේ. කොළඹ විශ්වවිද්‍යාලයේ වෛද්‍ය පීඨයේ, ජයෙෂ්ඨ කලීකාචාර්ය [REDACTED] මහතාගේ සෘජු අධීක්ෂණය යටතේ මෙම අධ්‍යයනය සිදු කෙරේ.

#### 2. අරමුණ

මෙම මාතෘකාව කෙරෙහි අපගේ අවධානය යොමු කිරීමට හේතු වූයේ වෙළඳපොළේ ඇති ඇතැම් වර්ගවල ජල බෝතල් වලින් පිළිකා වැනි බොහෝ රෝග ඇති කිරීමට හේතු විය හැකි හානිකර ද්රවය ජලයට කාන්දු විය හැකි බව බොහෝ පර්යේෂණ මගින් සොයාගෙන තිබීමයි. පාසැල් දරුවන් වැඩි වශයෙන් බෝතල්වල ජලය රැගෙන යන බව අපි දකිමු. පාසැල් දරුවන් රටෙහි අනාගතය වන බැවින් ඔවුන්ගේ සෞඛ්‍යය රැක ගැනීම අපගේ වගකීමයි. ශ්රී ලංකාව තුළ ආරක්ෂාකාරී ජල බෝතල් භාවිතයක් ස්ථාපිත කිරීම සඳහා මෙම දැනුම යොදා ගනු ඇතැයි අපි බලාපොරොත්තු වෙමු.

#### 3. පර්යේෂණාත්මක මැදිහත්වීම

ඔවුන් ගෙන යන ජල බෝතල් පිළිබඳ ප්රශ්නාවලියක් ලබාදීම සහ නිරීක්ෂණයක් සිදු කිරීම.

#### 4. සහභාගී වන්නන් තෝරා ගැනීම

මෙම අධ්‍යයනය සඳහා කොළඹ දිස්ත්‍රික්කය තුළ එක් පිරිමි පාසලක හා එක් ගැහැණු පාසලක සාමාන්‍ය පෙළ සිසුන් තෝරා ගෙන ඇත.

#### 5. ස්වේච්ඡා සහභාගීත්වය

මෙම පර්යේෂණයට ඔබේ දරුවා සහභාගී වීමට එකඟද නැද්ද යන්න තීරණය කිරීම ඔබ සතුය. ඔබ එකඟ නම්, ඔබේ දරුවා අත අප එවන ලද කැමැත්ත පල කිරීමේ පත්‍රිකාව සම්පූර්ණ කර

එවන්ත. ඔබ තීරණය කිරීමට පෙර, අප තිදෙනාගෙන් ඔබ කැමති කෙනෙකුට දුරකතනයෙන් කතා කල හැක.

## 6. ක්‍රියා පටිපාටිය

ඔබේ දුටු/පුතා අප විසින් සපයනු ලබන ප්රශ්නාවලිය පිරවීම පත්ති කාමරය තුළදී කරනු ඇත. අප එම ප්රශ්නාවලිය එම අවස්ථාවේ දීම එකතු කරගනු ලැබේ. ඒ සමඟම අපි ඔබේ දරුවාගේ චතුර බෝතලය පරීක්ෂා කර එය පිළිබඳ තොරතුරු සටහන් කර ගන්නෙමු.

## 7. කාල පරාසය

මෙයට විනාඩි 20 ක් පමණ ගතවිය හැකි අතර අප මෙය විවේක කාලයේදී සිදු කිරීමට බලාපොරොත්තු වන්නෙමු.

## 8. අවදානම් සහ අපහසුතා

මෙම අධ්‍යයනයේ දී, සංවේදී හෝ ඉතා පෞද්ගලික ප්රශ්න කිසිවක් ඇතුළත් කර නැති නිසා ඔබේ දරුවාට අපහසුතාවයක් ඇති නොවනු ඇතැයි අප බලාපොරොත්තු වෙමු.

## 9. ප්රතිලාභ

මෙමගින් ඔබගේ දරුවාට හෝ ඔබට ක්ෂණික හෝ සෘජු ප්රතිලාභයක් නොලැබෙනු ඇත. එහෙත්, ඔබේ දරුවාගේ සහභාගීත්වය, සමාජය තුළ ජල බෝතල් පිළිබඳ දැනුම, ආකල්ප හා භාවිතයන් පිළිබඳ වැඩි දැනුමක් ලබා ගැනීමට උපකාර වනු ඇත. එමගින් අනාගතයේදී ඇති විය හැකි සෞඛ්‍ය තර්ජන වැළැක්වීම සඳහා අවශ්‍ය ක්‍රියාමාර්ග ගැනීමට රජයේ සෞඛ්‍ය ප්රතිපත්ති සම්පාදකයින්ගේ අවධානය යොමු වනු ඇත.

## 10. රහස්‍යභාවය

සහභාගීවන්නන්ගේ පෞද්ගලික තොරතුරු ලබාගැනීමක් සිදු නොකෙරේ. වාර්තාගත තොරතුරු රහසිගතය. අප හැර අන් කිසිවෙකුට ඔහුගේ/ඇයගේ ප්රශ්නාවලියට පිවිසීමට නොහැක. වසරකට පසුව එම තොරතුරු විනාශ කරනු ලබයි.

## 11. ප්රතිපූරණය

මෙම අධ්‍යයනය සඳහා සහභාගීවන්නන්ට කිසිදු මුදලක් ගෙවනු නොලැබේ.

## 12. ප්රතික්ෂේප කිරීම හෝ ඉවත් වීම සඳහා ඇති අයිතිය

ඔබේ දරුවා මෙම පර්යේෂණ කටයුතුවලට සහභාගී වීමට ඉඩ නොදීමට තීරණය කළත් ඔබගේ දරුවාට අපහසුතාවයක් හෝ වෙනසක් සිදු නොවනු ඇත. ඔබේ දරුවාට කැමති ඕනෑම අවස්ථාවකදී අධ්යයනයෙන් ඉවත් වීමට ද, සම්පූර්ණ නිදහස ඇත.

### 13. පැහැදිලි කිරීම

ඔබට කිසියම් ජර්ශනයක් ඇත්නම්, ඔබට දැන් හෝ පසුව විමසීමට හැක. අධ්යයනය ආරම්භ කිරීමෙන් පසුව පවා ජර්ශන ඇසීමට අවශ්‍ය නම්, පහත සඳහන් අංකවලින් අප හා සම්බන්ධ විය හැකිය.



### 14. ඔබ මෙම අධ්යයනයට සහභාගී වීමට කැමති නම්,

මෙම අධ්යයනයට කැමැත්ත පළ කිරීමට පෙර, ඔබ මෙම තොරතුරු පත්‍රය සම්පූර්ණයෙන්ම කියවිය යුතු අතර, මෙම අධ්යයනයේ අරමුණ, ජර්නලාභ හා අවදානම් පැහැදිලිව අවබෝධ කර ගත යුතුය.

## Annexure 09: Information Sheet - Tamil

### தகவல் பத்திரம்

பதிப்பு 1.0 (08.01.2018)

தேர்வு செய்யப்பட்ட இரு பாடசாலைகளின் சாதாரண தர மாணவர்களால் பயன்படுத்தப்படும் தண்ணீர்ப் போத்தல்கள் பற்றிய அறிவு, நடைமுறை மற்றும் பழக்கவழக்கங்கள் பற்றிய ஆய்வு

#### 15. அறிமுகம்

கொழும்பு மருத்துவ பீடத்தின் மூன்றாம் ஆண்டு மாணவர்களான [REDACTED] ஆகிய நாம் மேற்கூறிய தலைப்பின் கீழ், சாதாரண தர மாணவர்களிடையே உள்ள தண்ணீர்ப் போத்தல் பாவனை சம்பந்தமான அறிவு, நடத்தைகள் மற்றும் பழக்கவழக்கங்கள் பற்றி ஒரு ஆய்வினை மேற்கொள்கிறோம். இவ் ஆய்வானது கொழும்பு மருத்துவ பீட விரிவுரையாளர் வைத்தியகலாநிதி [REDACTED] அவர்களின் நேரடிக் கண்காணிப்பின் கீழ் நடத்தப்படுகின்றது.

#### 16. நோக்கம்

சந்தையில் காணப்படும் சில தண்ணீர்ப் போத்தல்கள் நீரினுள் ஆபத்தான சில பதார்த்தங்களை வெளிவிடுவதாலும், இவை புற்று நோய் போன்ற பல்வேறு நோய்களை ஏற்படுத்தக் கூடியதாலும் நாம் இத் தலைப்பில் எமது கவனத்தைச் செலுத்தியுள்ளோம். மேலும் போத்தலில் நீர் கொண்டு செல்லும் பழக்கம் பாடசாலை மாணவர்களிடமே அதிகமாக உள்ளது. பாடசாலை மாணவர்களே நாட்டின் எதிர்காலம் என்ற வகையில், அவர்களது சுகாதாரத்தில் கவனம் செலுத்துவது கட்டாயமாகும். இவ் ஆய்வின் மூலம் பெறப்படும் அறிவானது எதிர்காலத்தில் இலங்கையில் பாதுகாப்பான தண்ணீர்ப் போத்தல் பாவனையை ஏற்படுத்த உதவும் என நம்புகிறோம்.

#### 17. ஆய்வின் செயற்பாட்டு வகைகள்

ஒரு கேள்விப் பத்திரம் வழங்கப்படும், மற்றும் மாணவர்கள் கொண்டு வரும் தண்ணீர்ப் போத்தல்கள் அவதானிக்கப்படும்.

#### 18. பங்குபற்றுவோர் தெரிவு

இரு பாடசாலைகளைச் சேர்ந்த சாதாரண தர மாணவர்களைத் தெரிவு செய்துள்ளோம். இதற்காக கொழும்பு மாவட்டத்திலுள்ள ஒரு ஆண்கள் பாடசாலையையும், மகளிர் பாடசாலையையும் தெரிவு செய்துள்ளோம்.

#### 19. சுய விருப்பு அடிப்படையிலான பங்குபற்றல்

உங்களது பிள்ளை இவ் ஆய்வில் பங்குபற்ற சம்மதிக்க அனுமதிப்பதா, இல்லையா என்பது உங்களது விருப்பத்தைப் பொருத்தது. நீங்கள் சம்மதிப்பதாயின் நாளை

உங்கள் பிள்ளை வரும் போது அனுமதியளித்து அனுப்புங்கள். நீங்கள் முடிவெடுப்பதற்கு முன்னால் உங்களுக்கு வசதியான ஒருவருடன் கலந்துரையாடலாம்.

## 20. செயன்முறை

உங்கள் மகன்.மகளுக்கு வகுப்பறையில் வைத்து எம்மால் ஒரு கேள்விப் பத்திரம் வழங்கப்பட்டு சேகரிக்கப்படும். அதே நேரம் உங்கள் பிள்ளையின் தண்ணீர்ப் போத்தலையும் சிறிது அவதானிப்போம்.

## 21. காலப்பகுதி

இது கிட்டத்தட்ட 20 நிமிடங்கள் அளவிலேயே எடுக்கும். இடைளை நேரத்திலேயே செய்ய எதிர்பார்த்துள்ளோம்.

## 22. ரிஸ்க்கள் மற்றும் அசௌகரியங்கள்

நாங்கள் எவ்விதமான உணர்வுபூர்வமான அல்லது அசௌகரியமான கேள்விகளை உள்ளடக்காததால் எவ்வித அசௌகரியமும் ஏற்படாது என எதிர்பார்க்கிறோம்.

## 23. பயன்கள்

உங்களுக்கோ உங்களது பிள்ளைக்கோ இதனால் நேரடியாக எவ்விதமான பயனும் இல்லாத போதிலும் இந்த ஆய்வில் பங்குபற்றுவதன் மூலம் மக்கள் மத்தியிலுள்ள தண்ணீர்ப் போத்தல் பாவனை பற்றிய அறிவு, நடத்தைகள் மற்றும் பழக்கவழக்கங்கள் பற்றிய தகவல்களைப் பெற்று எதிர்காலத்தில் அரசாங்க சுகாதார நடவடிக்கைகளால் எவ்விதும் பாதிப்பு ஏற்படாத வண்ணம் உதவி புரியலாம்.

## 24. இரகசியத்தன்மை

பங்குபற்றும்பவர்களின் சொந்த விடயங்கள் அறியப்பட மாட்டாது. சேகரிக்கப்பட்ட தரவுகளின் இரகசியத் தன்மை பேணப்படும். எங்களைத் தவிர வேறொருவரும் கேள்விப் பத்திரத்தைப் பார்க்க முடியாது. ஒரு வருடத்தின் பின் கேள்விப் பத்திரங்கள் யாவும் அழிக்கப்படும்.

## 25. கொடுப்பனவுகள்

ஆய்வில் பங்குபற்றுவதற்காக அவர்களுக்கு எவ்விதமான கொடுப்பனவுகளும் வழங்கப்பட மாட்டாது.

## 26. மறுப்பதற்கும், விலகிக் கொள்வதற்குமான உரிமை

உமது மகன்.மகள் ஆய்வில் பங்குபெற நீங்கள் அனுமதிக்காமல் விட்டாலும் உங்கள் மகன்.மகள் வேறுபாடுகளிற்கோ.துன்புறுத்தல்களிற்கோ உள்ளாக்கப்பட வாய்ப்புக்கள் எதுவும் இல்லை. விருப்பமான எந்நேரத்திலும் தங்களதும், தங்களுடைய பிள்ளையினதும் உரிமைகள் எதற்கும் பாதிப்பு இல்லாமல் விலகிக் கொள்ளலாம்.

## 27. தெளிவுபடுத்தல்

உங்களுக்கு இது பற்றி ஏதேனும் கேள்விகள் இருப்பின் இவர்களைத் தொடர்பு கொள்ளலாம். ஆய்வு ஆரம்பிக்கப்பட்ட பின்னரும் கேட்கலாம்.



**28. நீங்கள் இவ் ஆய்வில் பங்குபற்ற விரும்பினால்**

இத்தகவல் பத்திரத்தை முழுமையாக வாசித்து விளங்கி, இதன் சாதக பாதகங்களை முதலில் உணர்ந்து கொள்க.

**Annexure 10: Consent form - English**

**Certificate of Consent**

Version 1.0 (08.01.2018)

**Research on knowledge, attitudes and practices on types of water bottles consumed by ordinary level students two selected schools**

**To be completed by the parent**

1. Have you read the information sheet? (Please keep a copy for yourself)  
Yes ☐ No ☐
2. Have you understood the purpose, benefits, risks and discomforts of this study?  
Yes ☐ No ☐
3. Have you had an opportunity to ask any questions?  
Yes ☐ No ☐
4. Have you had satisfactory answers to all your questions?  
Yes ☐ No ☐
5. Have you received enough information about the study?  
Yes ☐ No ☐
6. Do you know that you can ask about any question regarding this study?  
Yes ☐ No ☐
7. Do you understand that your child is free to withdraw from study at any time, without having to give a reason and without incurring any penalty?  
Yes ☐ No ☐
8. Have you had sufficient time to come to your decision?  
Yes ☐ No ☐
9. Do you know that the anonymity of all the data your child has provided will be protected in the final report of this study?

Yes ☐

No ☐

10. Is your child's participation in this study entirely voluntary?

Yes ☐

No ☐

11. Do you agree to allow your child to take part in this study?

Yes ☐

No ☐

I have read all of the above and understood it. I consent voluntarily for my child to participate as a participant in this study.

Name of Parent or Guardian \_\_\_\_\_

Signature of Parent of Guardian \_\_\_\_\_

Date \_\_\_\_\_

---

### **To be completed by the student**

I have read all of the above and understood it. I assent voluntarily to participate as a participant in this study.

Name of Student \_\_\_\_\_

Signature of Student \_\_\_\_\_

Date \_\_\_\_\_

---

### **To be completed by the investigator**

I have explained the study to the above volunteer and he/she has indicated his/her willingness to take part in the study.

Name of Investigator \_\_\_\_\_

Signature of Investigator \_\_\_\_\_

Date \_\_\_\_\_

## Annexure 11: Consent form - Sinhala

### කැමැත්ත ලබාදීමේ සහතිකය

අනුවාදය 1.0 (08.01.2018)

තෝරාගත් පාසල් දෙකක සාමාන්‍ය පෙළ සිසුන් විසින් භාවිතා කරනු ලබන ජල බෝතල් වර්ග සම්බන්ධව දැනුම, ආකල්ප හා භාවිතය පිළිබඳ පර්යේෂණය

#### දෙමව්පියන් විසින් සම්පූර්ණ කළ යුතුය

1. ඔබ විසින් තොරතුරු පත්‍රිකාව කියවුවේද? (කරුණාකර පිටපතක් තබා ගන්න)

ඔව් ☐

නැහැ ☐

2. මෙම අධ්‍යයනයේ අරමුණ, ප්රතිලාභ, අවදානම් සහ අපහසුතා ඔබ විසින් තේරුම්ගෙන තිබේද?

ඔව් ☐

නැහැ ☐

3. මෙම අධ්‍යයනය ගැන ඕනෑම ප්රශ්නයක් ඇසීමට ඔබට අවස්ථාවක් ලැබුනේද?

ඔව් ☐

නැහැ ☐

4. ඔබේ සියලු ප්රශ්නවලට සෑහීමකට පත් විය හැකි පිළිතුරු ලැබුනේද?

ඔව් ☐

නැහැ ☐

5. අධ්‍යයනය පිළිබඳ ප්රමාණවත් තොරතුරු ඔබට ලැබී තිබේද?

ඔව් ☐

නැහැ ☐

6. මෙම අධ්‍යයනය පිළිබඳ ඕනෑම ප්රශ්නයක් ඇසීමට ඔබට හැකි බව ඔබ දන්නවාද?

ඔව් ☐

නැහැ ☐

7. ඔබේ දරුවාට කිසිදු හේතු දැක්වීමකින් හෝ කිසිදු දඬුවමකට යටත් වීමෙන් තොරව ඕනෑම වේලාවක අධ්‍යයනයෙන් ඉවත් වීමට නිදහස ඇති බව ඔබට වැටහේ ද?

ඔව් ☐

නැහැ ☐

8. ඔබේ තීරණය ගැනීමට ප්රමාණවත් කාලයක් ලැබුණේද?

ඔව් ☐

නැහැ ☐

9. මෙම අධ්‍යයනයේ අවසන් වාර්තාවේ දී ඔබේ දරුවා ලබා දී ඇති සියලු දත්ත වල නිර්නාමිකත්වය ආරක්ෂා කරනු ඇති බව ඔබ දන්නවාද?

ඔව් ☐

නැහැ ☐

10. මෙම අධ්‍යයනයට ඔබේ දරුවා සහභාගී කරවන්නේ ස්ව කැමැත්තෙන් ද?

ඔව් ☐

නැහැ ☐

11. මෙම අධ්‍යයනයට ඔබගේ දරුවා සහභාගී කරවීමට ඔබ එකඟද?

ඔව් ☐

නැහැ ☐

ඉහත සියල්ල කියවා තේරුම් ගැනීමෙන් පසුව මෙම අධ්‍යයනයට මගේ දරුවාව සහභාගී කරවීමට කැමැත්ත පල කරමි.

මව හෝ පියා හෝ භාරකරුගේ නම \_\_\_\_\_

මව හෝ පියා හෝ භාරකරුගේ අත්සන \_\_\_\_\_

දිනය \_\_\_\_\_

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**ශිෂ්යයා විසින් සම්පූර්ණ කළ යුතුය**

ඉහත සියල්ල කියවා තේරුම් ගැනීමෙන් පසුව මෙම අධ්‍යයනයට ස්වේච්ඡාවෙන් සහභාගී වීමට කැමැත්ත පල කරමි.

ශිෂ්යයාගේ නම \_\_\_\_\_

ශිෂ්යයාගේ අත්සන \_\_\_\_\_

දිනය \_\_\_\_\_

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**පර්යේෂකයා විසින් සම්පූර්ණ කළ යුතුය**

මෙම අධ්‍යයනය පිළිබඳ සහභාගී වන්නාට පැහැදිලි කර ඇති අතර ඔහු / ඇය සහභාගී වීමට කැමැත්ත පල කර ඇත.

පර්යේෂකයාගේ නම \_\_\_\_\_

පර්යේෂකයාගේ අත්සන \_\_\_\_\_

දිනය \_\_\_\_\_

## Annexure 12: Consent form - Tamil

### ஒப்புக்கொள்ளும் படிவம்

பதிப்பு 1.0 (08.01.2018)

தேர்வு செய்யப்பட்ட இரு பாடசாலைகளின் சாதாரண தர மாணவர்களால் பயன்படுத்தப்படும் தண்ணீர்ப் போத்தல்கள் பற்றிய அறிவு, நடைமுறை மற்றும் பழக்கவழக்கங்கள் பற்றிய ஆய்வு

### பெற்றோரினால் நிரப்பப்பட வேண்டியது

1. நீங்கள் தகவல் பத்திரத்தை முழுமையாக வாசித்து விட்டீர்களா? (உங்களிடம் ஒரு பிரதியை வைத்துக் கொள்ளுங்கள்)  
ஆம் ☐ இல்லை ☐
2. இதன் நோக்கம், அனுகூலங்கள், பிரதிகூலங்கள் மற்றும் அசௌகரியங்களை விளங்கிக் கொண்மீர்களா?  
ஆம் ☐ இல்லை ☐
3. உங்களுக்கு ஏதாவது கேள்விகளைக் கேட்க வாய்ப்பு கிடைத்ததா?  
ஆம் ☐ இல்லை ☐
4. உங்களது கேள்விகளுக்கு திருப்திகரமான பதில் கிடைத்ததா?  
ஆம் ☐ இல்லை ☐
5. உங்களுக்கு ஆய்வு பற்றிய போதியளவு தகவல் கிடைத்ததா?  
ஆம் ☐ இல்லை ☐
6. நீங்கள் ஆய்வு சம்பந்தமாகக் கேள்விகள் கேட்க முடியுமென்பதை அறிந்திருந்தீர்களா?  
ஆம் ☐ இல்லை ☐
7. நீங்கள் விரும்பிய போது காரணம் கூற வேண்டிய அவசியம் இல்லாமல் ஆய்விலிருந்து விலகிக் கொள்ளலாம் என்பதைப் புரிந்து கொண்மீர்களா?  
ஆம் ☐ இல்லை ☐
8. உங்களுக்குத் தீர்மானமெடுப்பதற்குப் போதுமானளவு நேரம் வழங்கப்பட்டதா?  
ஆம் ☐ இல்லை ☐
9. இவ்வாய்வின் இறுதி அறிக்கையிலும் உங்களது எத்தகவலும் வெளிப்படுத்தப்பட மாட்டாது என்பது உங்களுக்குத் தெரியுமா?  
ஆம் ☐ இல்லை ☐

10. இவ் ஆய்வில் உங்கள் பிள்ளையின் பங்குபற்றல் முழுமையாக சுய  
விருப்பத்தின் அடிப்படையிலானதா?

ஆம் ☐

இல்லை ☐

11. இவ் ஆய்வில் உங்கள் பிள்ளை பங்குபற்ற விரும்புகிறீர்களா?

ஆம் ☐

இல்லை ☐

நான் மேற்கூறிய அனைத்தையும் தெளிவாக வாசித்து விளங்கிக் கொண்டேன். நான்  
இவ் ஆய்வில் பங்குபற்ற முழுமையாக சம்மதிக்கிறேன்.

பெற்றோர் அல்லது பாதுகாவலர்

பெயர்

பெற்றோர் அல்லது பாதுகாவலர் கையொப்பம்

திகதி

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### மாணவரால் பூரணப்படுத்தப்பட வேண்டியது

நான் மேற்கூறிய அனைத்தையும் தெளிவாக வாசித்து விளங்கிக் கொண்டேன். நான் சுய  
விருப்பத்தினடிப்படையில் இதில் பங்குபற்றுகிறேன்.

மாணவர் பெயர்

மாணவர் கையொப்பம்

திகதி

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### மேற்பார்வையாளரினால் நிரப்பப்பட வேண்டியது

நான் மேற்கூறிய பங்குபற்றுவருக்கு ஆய்வு பற்றி விளக்கமகித்ததுடன், அவர் இதில்  
பங்குபற்றுவதற்கான தனது விருப்பத்தைத் தெரிவித்தார்.

மேற்பார்வையாளர் பெயர்

மேற்பார்வையாளர் கையொப்பம்

திகதி