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Extent of Hygienic Practices in the Prevention of Helminthiasis among Primary Pupils

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ABSTRACT

An intestinal worm infection of the small and large intestine is known as helminthiasis. Worm eggs can be found in soil contaminated by human waste or raw food that has come into contact with contaminated soil. The ramifications of soil-transmitted helminthiasis are particularly severe for children, who are the most susceptible to it due to their developing immune systems and behaviors that increase their contact with contaminated environments. This study aimed to determine the extent of hygienic practices among primary. A descriptive correlational research design was utilized in this study. A questionnaire checklist formulated by the researcher, consisting of questions using a Likert Scale that measured the hygienic practices of the pupils, was used in the study. The researcher attended to various responsibilities and ensured the research was carried out honestly, objectively, and honestly. The data was treated with frequency and percentages to describe the Socio-demographic profile of the respondents, mean to convey the extent of hygienic practices, and Bi-variate correlational analysis was used to determine the relationship between the incidence of helminthiasis and the profile of the respondents and factors. The extent of hygienic practices of the primary pupils along personal hygiene is "Highly Practiced", while moderately practiced along environmental practices and conclusively the overall extent of hygienic practices is on the "Practiced level". Only the highest educational attainment of the Socio-demographic profile of the respondents bears a significant relationship with the overall hygienic practices. When taken singly, ordinal position and age yielded a significant relationship between the extent of hygienic practices and personal hygiene and family monthly income, which is significantly correlated to the extent of hygienic practices and environmental practices.

Keywords: Hygienic Practices, Personal Hygiene, Environmental Sanitation, Primary Pupils, Helminthiasis

INTRODUCTION

Helminthiasis, encompassing various parasitic worm infections, remains a significant public health challenge, especially in impoverished areas with inadequate sanitation and limited access to clean water. Over 1 billion people worldwide have intestinal nematode infections brought on by soil-transmitted helminths (STH). This includes estimates accounting for as much as 40% of the global burden from topical diseases (WHO). Various interventions and programs have been implemented to address this problem. A nationwide STH mass drug administration (MDA) program was launched in 2006. However, the country's overall STH prevalence remains stubbornly high because of the difficulties associated with implementing the MDA strategy, including lack of public awareness of the value of routine treatment, misunderstandings of the MDA strategy, lack of confidence in the drugs being used, fear of adverse events, and a general mistrust of government programs, may have contributed to the prevalence's ongoing rise relatively Water, sanitation, and hygiene (WASH) programs are already in place and being used in communities [Community-Led Total Sanitation (CLTS) program, providing toilet bowls, and providing a subsidy for the construction of latrines] and schools [e.g., WASH in School (WINS) program]; however, sustained implementation is necessary to achieve expected results. Although Wash, Sanitation, and Hygiene (WASH) programs are generally being taught in schools, integration of Soil-Transmitted Helminths (STH) as a disease and community problem in the current public elementary school curriculum still needs to be improved. The Integrated Helminth Control Program (IHCP) currently implemented in the country, which is focused on improved sanitation and personal hygiene, health education, and preventive chemotherapy, will require continuous appraisal.

Furthermore, the "Active approach of spreading evidence-based interventions or knowledge to the target audience via determined channels using planned strategies" defines dissemination. The main goals of dissemination are to raise end users' awareness and understanding of the evidence, impact their intent to use it and raise the possibility that they will embrace it. Therefore, a systematic approach to identifying efficient ways to share knowledge with specific audiences to alter these dissemination outcomes is meant to be understood as dissemination science. (Turon, et al., 2023)

METHODOLOGY

This study aimed to determine the extent of hygienic practices among primary pupils of Villamar Elementary School of Villamar Caoayan, Ilocos Sur, in the Philippines. A descriptive correlational research design was utilized in this study to describe the relationship among variables rather than to infer cause-and-effect relationships. The instruments used in gathering the data was a questionnaire checklist formulated by the researcher consisting of profiles of the child and the parents and questions in a Likert Scale that measured the hygienic practices of the pupils along with their personal hygiene and environmental sanitation. The researcher attended to various responsibilities and ensured that the research was carried out honestly, objectively, and honestly. The researcher treated

the data with frequency and percentages to describe the Socio-demographic profile of the respondents, mean to convey the extent of hygienic practices, and Bi-variate correlational analysis was used to determine the relationship between the extent of hygienic practices and the profile of the respondents and factors. The respondents were Primary Pupils of Villamar Elementary School of Caoayan, Ilocos Sur, limited to Grade I-IV students and their parents. The distribution of the respondents in the child was 50(100%) when taken singly; 12 (24.0) child respondents were from Grade IV, 13(26.0) were from Grade III, 16(32.0) were from Grades 2, and 9(18.0) are from Grade I. for the distribution of Parent's/Guardian's 46 respondents are female and four are male.

RESULTS AND DISCUSSION

Respondents' Profile (Child)

The Socio-demographic Profile of the respondents. In terms of the child's grade level, age, sex, and ordinal position, as well as the parent's age, sex, highest educational attainment, monthly family income, and occupation,

Grade Level. It is observed in Table 1 that a significant percentage of child respondents are grade II, 16 (32%), followed by grade III,13 (26%). There were 12 (24%) child respondents in grade IV, and the most minor, 9 (18%) of the child respondents were in grade 1.

Age. As shown in the same table, 16 (32%) of the child respondents are eight years old; the next are those nine years old, with a total of 13(26%). Likewise, 11 (22%) of the child respondents are seven years old. Five (10%) of them are six years old, and four (8%) are ten years old, while only one (2%) is eleven years old.

Sex. The majority, 26 (56%) of the respondents are male, while 24 are female. This implies that males outnumber females.

Ordinal Position. A significant number of 18 (36%) of the child respondents were the first-born child, followed by the second child accounting for 15 (30%); on the other hand, 10 (20%) of them are the third child. Four (8%) are the fifth child, and the last three (6%) belong to the third ordinal position. This implies that most of the pupils who responded were the eldest children in the family.

Table 1
Profile of the Respondents in terms of personal-related factors

Profile Variables	Frequency	Percentage
Grade Level		
Grade IV	12	24.00
Grade III	13	26.00
Grade II	16	32.00

Profile Variables	Frequency	Percentage
Grade I	9	18.00
Total	**50**	**100.00**
Age		
11 years old	1	2.00
10 years old	4	8.00
9 years old	13	26.00
8 years old	16	32.00
7 years old	11	22.00
6 years old	5	10.00
Total	**50**	**100.00**
Sex		
Male	26	52.00
Female	24	48.00
Total	**50**	**100.00**
Ordinal Position		
1st child	18	36.00
2nd child	15	30.00
3rd child	10	20.00
4th child	3	6.00
Others	4	8.00
Total	**50**	**100.00**

Socio-demographic Profile of Parent/Guardian

Age. It can be observed from Table 2 that a significant number of 24 (48%) of the parent /guardian respondents belong to the age bracket 31-40 years old, followed by those who are 30 years old and below, accounting for 12 (24%). On the other hand, of nine (18%) of the parentsparents'/guardian respondents are 41-50 years old, and the most minor 5 (10%) of them belong to the age bracket of 50 and above.

Sex. Almost all 46 (92%) of the parents'parents/guardian respondents are female, and only four (8%) are female; current childcare arrangements do appear to be associated with changes in working hours and lower levels of employment attachment. The unprecedented school closures, social distancing measures, and stay-at-home orders implemented to contain the COVID-19 pandemic have the potential to dramatically magnify gender differences in terms of both childcare arrangements and work. Even though they are currently employed, mothers seem to be caring for children more. Mothers' childcare responsibilities seem less affected by their status as "currently working" than fathers' childcare responsibilities. (Zamarro, 2021)

Parent/Guardian Educational Attainment. A significant number, 24 (48%) of the parents'parents/guardian respondents were high school graduates; next were those who were college undergraduates, with a total number of nine (18%). The exact number, which is six each (12%), are those who were college graduates and high school graduates. However, three (6%) of the parents/guardian respondents were elementary under graduates, and only two (4%) finished elementary education.

Family Monthly Income. It is evident in Table 3 that there are 18 (36%) of the parents'parents/guardian respondents with a family monthly income which ranges from Php 1,000-Php 3000, followed by those with a family monthly income ranging from Php 3,000-Php 5,000 accounting for 15 (30%). At the same time, 11 (22%) of the parents'parents/guardian respondents have a family monthly income ranging from Php 5,000-Php to 8,000. Five (10%) of them have a family monthly income ranging from Php8001-Php10,000, and the least (2%) with a monthly family income of Php10,000 and above.

Occupation. It is reflected in the same table that the great majority, 46 (92%) of the parents'parents/guardian respondents, are unemployed while only four (8%) are employed. Increased rural development lowers women's unemployment, making rural development a key predictor of women's unemployment. This could be because the bulk of impoverished women live in rural areas, which have opened up, allowing them to engage in worthwhile economic activities that bring in money (Ovamba, 2019).

Extent of Hygienic Practices of Primary Pupils Along Personal Practices

It is noted in Table 2 that the primary pupil respondents highly practiced personal hygienic practices man,ifested by the mean rating of 4.51. The result of the study implies that primary pupils understand the importance of practicing personal hygienic practices to maintain good health.

Hand Hygiene. The overall result shows that the primary pupil respondents highly practiced hand hygiene, as manifested by the mean rating of 4.61. The result of the study could be a manifestation that primary pupils always remembered what was taught by their teachers on the significance of practicing hand washing. As such, educational interventions raised awareness of the importance of hand hygiene compared to those who had not experienced the educational intervention, and education combined with accessible, convenient hand hygiene may result in a sustainable increase in the frequency of handwashing among elementary school children (Lary et al., 2020).

Table 2
Profile of the Respondents in terms of Parent/guardian-related factors

Profile Variables	Frequency	Percentage
Age		
Above 50 years old	5	10.00

Profile Variables	Frequency	Percentage
41 – 50 years old	9	18.00
31 – 40 years old	24	48.00
30 years old and below	12	24.00
Total	**50**	**100.00**
Sex		
Male	4	8.00
Female	46	92.00
Total	**50**	**100.00**
Highest Educational Attainment		
College Graduate	6	12.00
College Undergraduate	9	18.00
High School Graduate	24	48.00
High School Undergraduate	6	12.00
Elementary Graduate	2	4.00
Elementary Undergraduate	3	6.00
Total	**50**	**100.00**
Family Income		
Above Php 10,000	1	2.00
Php 8,001 – Php 10,000	5	10.00
Php 5,001 – Php 8,000	11	22.00
Php 3,001 – Php 5,000	15	30.00
Php 1,001 – Php 3,000	18	36.00
Total	**50**	**100.00**
Occupation		
Employed	4	8.00
Unemployed	46	92.00
Total	**50**	**100.00**

When taken singly, the primary pupil respondents always wash their hands with soap and water with a mean of 4.88, wash their hands before and after eating (mean =4.92), use rubbing alcohol as an alternative for hand washing (4.40), use spoon and fork when eating (mean=4.64), cut fingernails regularly mean (4.74), wash hands after using the toilet (mean 4.98), wash hands after playing (means.64). This indicates that primary pupils practice hand hygiene to prevent the entrance of microorganism into their body to prevent the occurrence of diseases because proper hygiene and effective handwashing are essential to food safety. It is estimated that foodborne pathogens, both major known pathogens and unspecified agents, cause 47.8 million illnesses, 127,830 hospitalizations, and 3037 deaths in the U.S. each year (Scallan et al., 2011). While eliminating all foodborne diseases is unrealistic, certain food safety practices, such as handwashing, effectively reduce disease incidence.

However, the primary pupil respondents seldom bite their fingernails, with a mean rating 2.30. This implies that the said respondents also believed that biting fingernails is one way for helminthic worms to enter the body. It can be observed that even if children's hands look clean, parasitic stages of intestinal nematodes remain attached to their nails (Khanum. 2017).

Bathing and Grooming. The overall mean rating of 4.75 indicates that the pupil respondents "Highly Practiced" personal hygienic practices, bathing, and grooming. This is a manifestation that primary pupils are already conscious of their appearance and want to look clean and neat. Being clean and neat will prevent them from getting sick; thus, personal hygiene knowledge and practices are satisfactory among school children. Personal hygiene is not an isolated behavior. Instead, it varies from person to person according to different factors. Intervention programs raising the awareness and importance of personal hygiene among schoolchildren through coordinated education measures by parents, teachers, and the media will be beneficial in imparting these early in life (Ghanim, 2016).

It is also worth noting that the primary pupil respondents take a bath before going to school with a mean rating of 4.86, comb hair daily (mean =4.88), change soiled clothing (mean=4.80), change underwear regularly (mean=4.78), and take a bath before going to bed (mean=4.62). This indicates that primary pupils know hygienic practices, such as bathing and grooming, that will make them comfortable and presentable and protect them from illness. Better health does not come from the mere acquisition of health knowledge but from its application (Nwonye et al., 2022). In other words, health depends on what the pupils know and what they do. Possessing specific basic health knowledge is essential for everyone to display positive health practices in hygiene. For instance, the care of the skin, in terms of the number of times one bath, use of handkerchiefs, washing of hands, care of ears and nails, dumping of refuse, and other areas where pupils have harmful health practices, should be emphasized.

Foot Hygiene. The primary pupil respondents "Highly Practiced" foot hygiene as supported by the overall mean of 4.31. This implies that primary pupils know that the feet are also a portal of entry of STH (soil-transmitted helminths), thus an indication that they follow foot hygienic practices. Skin-penetrating worms such as hookworms and the human threadworm Strongyloides stercoralis dwell in the soil before infecting their host via the feet, wherein it enters from the soles of the feet, penetrating it to move through the vessels (Castelleto et al., 2014).

Taken individually, the primary pupil respondents always cut their toenails with a mean rating of 4.64, wear slippers (mean =4.88), use clean footwear (mean =4.76), and wash their feet after playing (mean=4.82). Knowing that the feet are one of the portals of entry of microorganisms, the primary pupil respondents adhere to hygienic foot practices to maintain wellness. Footwear and Foot hygiene are effective ways to block infection with STH that penetrates the skin, but conveying the message that shoe-wearing is beneficial

for health is challenging, especially in low-literacy populations, and wearing footwear is associated with significantly lower odds of infection with hookworm, Strongyloides, and other STHs. However, studies associating shoe-wearing behavior with hookworm infection have mainly been cross-sectional, with few cohorts, case-control, or experimental studies (Paige et al., 2017).

Likewise, the primary pupil respondents Seldom walk barefooted, with a mean rating of 3.55. Those who seldom walk barefoot still acknowledge the importance of foot hygiene. The children have made it into a habit of walking or playing barefoot as it may be an effect of their upbringing; a study by (D'Souza, 2022) believes that addressing foot-related care is a necessary step in promoting health, preventing illness, and improving access to health services. Various social determinants of health also impact children, such as limited income, low social status, poor health knowledge, decreased social support and coping skills, unhealthy behaviors, and inequitable access to health services.

Toilet Hygiene. The primary pupil respondents practiced toilet hygienic practices, backed up by the overall mean rating of 4.07. This indicates that primary pupils tend to belittle the importance of toilet hygiene as it may be a source of reinfection or autoinfection in cases of a parasitic infection; this may indicate that the pupils have low literacy and less social support from their environment as they grow up. Nearly half of the school children had negative perceptions of school toilets. This should raise awareness and concern for school staff to consider and investigate potential hygiene improvements considering the impact of toilet hygiene (Zemer et al., 2023).

However, taken singly, the pupil respondents always use tissue paper after toilet use (mean =4.26) and water after toilet use (mean 4.86). Maintaining good bathroom hygiene is crucial for preventing infections linked to respiratory and enteric bacteria in homes and restrooms. When misused soap and detergent are the only things that lead to cross-contamination in a restroom (Abney et al., 2021).

However, the primary pupil respondents "Sometimes" use a piece of paper after toilet use, with a mean rating of 2.90 toilets, seen negatively by nearly half of the schoolchildren. Given the effects seen here, school employees and parents should be more aware of this and concerned enough to think about and investigate possible facility improvements. The children's well-being depends on the implementation of suitable education as well as improved security and restroom facilities (Shkalim Zemer et al., 2021)

Table 3
Extent of Hygienic Practices Among Primary Pupils in terms of Personal Hygiene

Indicators	WM	TR
A. Hand Hygiene		
1. Washes hands with soap and water.	4.88	HP
2. Washes hands before and after eating.	4.92	HP

3. Rubs alcohol as alternative to hand washing	4.40	HP
4. Uses spoon and fork when eating.	4.64	HP
5. Cuts fingernails regularly.	4.74	HP
6. Washes hands after using the toilet.	4.98	HP
7. Washes hands after playing.	4.64	HP
8. Bites fingernails.	2.30	Se
AWM	**4.61**	**HP**
B. Bathing and Grooming		
1. Takes a bath before going to school	4.86	HP
2. Combs hair daily.	4.88	HP
3. Changes soiled clothing.	4.80	HP
4. Changes underwear regularly.	4.78	HP
5. Takes a bath before going to bed.	4.62	HP
AWM	**4.79**	**HP**
C. Foot Hygiene		
1. Cuts toenails.	4.64	HP
2. Wears slippers	4.88	HP
*3. Walks barefooted.	3.56	HP
4. Uses clean footwear.	4.76	HP
5. Washes feet after playing.	4.82	HP
AWM	**4.31**	**HP**
D. Toilet Hygiene		
1. Uses tissue paper after toilet use.	4.26	HP
2. Uses water after toilet use.	4.86	HP
*3. Uses a piece of paper after toilet use.	2.90	So
AWM	**4.07**	**P**
OWM	**4.51**	**HP**

Legend:

Mean Ranges	Descriptive Rating	Transmuted Rating
4.21 – 5.00	Always	Highly Practiced (HP)
3.41 – 4.20	Often	Practiced (P)
2.61 – 3.40	Sometimes	Moderately Practiced (MP)
1.81 – 2.60	Seldom	Slightly Practiced (SP)
1.00 – 1.80	Never	Not Practiced (NP)

Extent of Hygienic Practices of Primary Pupils along Environmental Sanitation

It is reflected in Table 4 that the primary pupil respondents rated "Moderately practiced" hygienic practices along with environmental sanitation as backed up by the rating of 3.29. This indicates that primary pupils are not so conscious about environmental practices. The primary contributing factors are inadequate sanitation practices and personal hygiene, which lead to school absence and lower academic performance in children who become unwell (Pradhan et al., 2020).

The overall mean rating of 2.74 suggests that the primary pupils "Moderately practiced" hygienic practices along with environmental sanitation and type of toilet. The primary pupils are not yet aware of the pros and cons brought about by the different types of toilets. Behavioral and social constraints at the household and individual levels impede toilet use. The mere possession of a household toilet does not guarantee its exclusive use in rural field practice settings (Takhelchangbam et al., 2023).

The primary pupil respondents rated "Highly Practiced" use water-sealed toilets whenever they defecate or urinate (mean=4.22). This means that primary pupils appreciate using a sanitary toilet, the water-sealed type. On the contrary, externalities of the widespread usage of sanitary toilets include improving residents' health. In addition to adding to the body of knowledge on the health benefits of improved sanitation, the concept offers developing communities a guide for improving rural living conditions. Sanitary toilet use should be actively encouraged to lower the prevalence of illnesses in the future (Gu et al. 2023).

Moreover, primary school pupils sometimes use the modern type of toilet, the gravity flush toilet, by just pushing down the toilet handle. (mean=3.38) Moreover, other primary pupils dig a hole and cover it after defecation (mean =2.94). Primary pupils still cannot distinguish between sanitary and unsanitary types of toilets. As long as there is a place for them to defecate or urinate, they will do it even if open defecation continuously remains a major global sanitation challenge, contributing to an estimated 1.6 million deaths per year. Ghana ranked second in Africa for open defecation and had the fourth-lowest sanitation coverage in 2010. Evidence indicates that about 32% of the rural Ghanaian population still practice open defecation due to a lack of access to basic sanitation facilities, drifting the country from achieving universal access to sanitation by 2030(Appiah-Effah et al., 2024). Unsafely managed excreta harms human health overall and children's health in particular. They damage the quality of air, soil, surface water, and groundwater. However, most of the world's excreta today are unsafely managed or not managed at all. Nearly two decades after the United Nations (UN) identified sanitation as a global development priority, more than four billion people in low- and middle-income countries (LMICs) lack access to safely managed sanitation. Two-thirds of all human waste generated remains unsafely disposed of (Hyun et al., 2020).

Drainage Type. The primary pupil respondents rated "Moderately practiced" hygienic practices along drainage type as indicated by the overall mean rating of 3.2. The primary pupils may not yet be aware of the different drainage types or the benefits of good practices in using the different types of drainage. In India and other developing nations, sanitation services have been comparatively ignored. Therefore, managing wastewater in rural regions is critical to improving these services (Rashid. 2019) relatively; the prospect of financial assistance from rich countries urges developing countries to be encouraged to install wastewater treatment facilities, but in order to properly utilize any aid, local factors must be carefully taken into account. The economic standing of the community and the municipality in question must be considered (Masoud et al., 2010). Over many years, engineering research has aided in the planning, creating, and assessing the technologies and physical infrastructures required for sanitation. Two main objectives have guided

engineers' design work: (a) keeping people away from excrement and (b) reducing the adverse effects that sanitation systems and excrement have on public health and the environment. Because engineering works specifically with the physical movement of excreta, it is most closely associated with the traditional sanitation service chain (Hyun et al., 2020).

Taken singly, the pupil respondents rated "Practiced" use of the blind type of drainage with a mean rating of 3.52; utilization of the blind type of drainage means that the primary pupils recognize the importance of the blind type of drainage for preventing some diseases. Like numerous poor nations, Lebanon does not possess a national wastewater management plan capable of adequately safeguarding environmental quality and human health. As a result, the nearby towns and cities have had to design and carry out their wastewater treatment system arrangements (Masoud et al., 2010).

Likewise, the respondents rated "Moderately Practiced" (mean=3.12) to use the open type of drainage. The use of open drainage is considered unsanitary, which can contribute to the occurrence of diseases. 70% of people in Jamaica, a developing country, rely on onsite sanitation systems, which can offer an efficient and reasonably priced solution for treating wastewater in rural areas. On the other hand, their neglect and degradation harm the ecosystem and public health. Fecal sludge management has traditionally been approached as a regional issue (Fernandes et al., 2008).

Garbage Collection and Disposal. The overall extent of Hygienic Practices of the primary pupil respondents is on the "Practiced" level, as manifested by the overall mean rating of 3.86. This implies that primary school pupils understand the benefits of good practices in garbage collection and disposal in the prevention of diseases. Relatively implementing garbage collection and disposal techniques, individuals can be inspired to modify their waste-reducing behaviors and inspire others to do the same. The process by which participants inspired others to reduce waste is called "catalyzing stewardship." This phrase implies the exchange of concepts and methods without implying that the participants assumed a leadership position (O'Connell et al., 2012).

The primary pupil respondents rated it as "Highly Practiced" (mean=4.96), segregating garbage and regularly cleaning the environment (mean=4.58). This implies that primary pupils recognize the importance of waste segregation and maintaining the cleanliness of the environment. There are insights into the advantages and prospects of using life cycle thinking approaches in the creation and execution of waste management plans. This study emphasizes how vital life cycle assessment and life cycle thinking are to encourage sustainable waste management methods, guarantee adherence to social regulations, and provide a basis for better-informed regional planning initiatives (Liao et al., 2023).

However, the primary pupil respondents rated "Moderately Practiced" (mean =4.14) compost garbage after collection and disposal and openly dump the garbage. However, dumping garbage in the environment is hazardous. The primary pupils might not know this; thus, they dump garbage in the environment. The table also noted that the

primary pupils Sometimes (mean=2.86) burn garbage in the environment after collection. Burning garbage in the environment contributes to global warming, which primary school pupils might not know about. Burning solid waste in the open is a common practice in developing nations. However, open burning releases emissions of black carbon (BC), a pollutant with a global warming potential (GWP) that is up to 5,000 times greater than carbon dioxide (CO2), which hurts human health and climate change (Reyna et al., 2019).

Source of Drinking Water. The overall mean rating of 3.63 suggests that the primary pupil respondents' level of hygienic practices and drinking water sources is on a "Practiced" level. This is a manifestation that primary pupils can identify safe and unsafe drinking water sources. For water quality initiatives to be successful over the long run, communities must be adequately involved at critical stages of implementation. In low-income settings, more acceptance and sustainability of water quality improvements will result from timely studies on the factors impacting uptake prior to implementation (Francis et al., 2015).

Further scrutiny of the table shows that the primary pupil respondents rated Slightly Practiced" (mean =2.54) drink chlorinated water, drink through a deep well (mean =2.42), drink through an unprotected spring (mean=2.36), and drink through a water pump (mean =2.16). Children aged 6 to 23 months are more likely to suffer from stunting if they do not have access to clean drinking water, are not adequately sanitary, and have mothers who do not practice good hygiene. (Novianti et al. 2023).

On Food Storage. The extent of hygienic practices of the primary pupil respondents is "Moderately Practiced," as evidenced by the average mean rating of 2.69. This means that primary pupils may not yet be involved in food storage because physical environments, particularly the kitchen, present a challenge for mothers and other family members in Nepal's rural hill country when practicing proper food hygiene. Due to moms' everyday poor food hygiene habits, young children were frequently exposed to highly polluted milk, food, and water (Gautam et al., 2021).

The table reveals that the primary pupil respondents rated "High Practiced" (mean=3.2) cover food with a plate for storage. Covering food with plates will prevent rodents, flies, and other insects from landing on it, thus preventing the food from getting contaminated. The urban environment quickly worsens in many developing countries due to population expansion, poor hygiene, and rising urban poverty. Inadequate surface-water drainage systems, rubbish collection services, poor food hygienic practices, and densely populated homes in shanty towns or slums all contribute to the development of favorable conditions for spreading infectious disease vectors and reservoirs. Because of this, vector-borne illnesses like dengue, malaria, and lymphatic filariasis are increasingly severe public health issues in many tropical nations linked to rising urbanization (Knudsen et al., 1998).

The primary pupil respondents rated "Practiced" (mean=2.82) use refrigerators for storing food. Storing food in the refrigerator will prevent food spoilage, and cabinets will be used for storing food (mean=2.82), "Moderately Practiced" (mean=3.26), and food will be put in a basket for storage. A study discovered that children in homes with refrigerators

were 0.17 standard deviations taller for their age after two years and that households with refrigerators were more likely to purchase food that must be refrigerated. Additionally, we discovered that refrigeration was linked to a 0.26 standard deviation drop in BMI for age, an impact that was more strongly influenced by height than by weight. These findings imply that refrigeration might contribute to the undernutrition declines seen in middle-class and low-income nations throughout the past few decades (Martinez et al., 2021).

Extent of Hygienic Practices of Primary Pupils

As shown in Table 4, the extent of hygienic practices of primary pupil respondents on the Practiced level is reflected by a mean of 3.94. This is a manifestation that primary pupils adhere to hygienic practices to maintain their health.

Further scrutiny of the table shows that the primary pupil respondents' extent of hygienic practices along personal hygiene is "Highly Practiced" (mean = 4.51), while moderately practiced (mean = 3.29) along with environmental practices.

Table 4
Extent of Hygienic Practices Among Primary Pupils in terms of Environmental Sanitation

Indicators	WM	TR
A. Toilet Type		
1. Uses modern type of toilet after defecation or urination for flushing	3.38	MP
2. Uses water sealed source after defecation or urination for flushing	4.22	HP
3. Uses pit privy after defecation or urination	2.94	MP
AWM	**2.74**	**MP**
B. Drainage Type		
1. Uses an open type drainage system	3.12	MP
2. Uses a blind type drainage system	3.52	P
AWM	**3.20**	**MP**
C. Garbage Collection and Disposal		
1. Segregates garbage	4.96	HP
2. Composts garbage after collection and disposal	4.14	P
3. Openly dumps garbage in the environment after collection	3.54	P
4. Burns garbage in the environment after collection	2.86	MP
5.Regularly clean the environment	4.58	HP
AWM	**3.86**	**P**
OWM	**4.79**	**HP**
D. Source of Drinking Water		
1. Drinks chlorinated tap water (NAWASA)	2.54	SP
2. Drinks through the water pump	2.16	SP
3. Drinks through a deep well	2.42	SP
4. Drinks through an unprotected spring	2.36	S

AWM	**3.63**	**P**
E. Food Storage		
1. Uses Cabinets for storing food	3.5	P
2. Uses Refrigerator for storing food	3.82	P
3. Covers food with plate for storage	4.32	HP
4. Puts food in a basket for storage	3.26	MP
AWM	**2.69**	**MP**
OWM	**3.29**	**MP**

Legend:

Mean Ranges	Descriptive Rating	Transmuted Rating
4.21 – 5.00	Always	Highly Practiced (HP)
3.41 – 4.20	Often	Practiced (P)
2.61 – 3.40	Sometimes	Moderately Practiced (MP)
1.81 – 2.60	Seldom	Slightly Practiced (SP)
1.00 – 1.80	Never	Not Practiced (NP)

Correlation Between the Profile of the Respondents and Hygienic Practices Along Personal Hygiene

It is reflected in Table 5 that a significant relationship exists between age and the overall extent of hygienic practices along with personal hygiene (.292). This implies that the older the individual, the better their overall hygienic and personal practices. Older individuals tend to be more conscious of hygienic practices to maintain good health. In relation, the Majority (93.7 percent) of the 25 million Filipino families had a hand washing facility, mainly in the form of a fixed facility (sink/tap) in the dwelling unit (69.9 percent), the Majority of which had available water (96.6 percent). With the provision of bar/liquid soap (82.9 percent) and detergent soap (43.0 percent) for hand washing, In 2019, most families (92.9 percent) had access to Basic service level handwashing facilities or handwashing facilities on premises with soap and water. This significantly increased from 76.9 percent in 2017 (PSA.gov.ph, 2020).

Likewise, the ordinal position yielded a significant relationship between the overall extent of hygienic practices and personal hygiene (.317). This is a manifestation that firstborn children possess better hygienic practices and personal hygiene. Firstborn children are role models for their younger siblings, so they must have good personal hygiene practices. The process by which a firstborn kid fulfills his duty in a family, where he begins by being compelled to fulfill his responsibilities and eventually becomes acclimated to success in his present life. As roles are established, the eldest kid often feels appreciated and acknowledged. However, he or she may also experience disappointment and lose confidence due to not being included in family decision-making. In some instances, however, they take on the role of parents (Biruny et al., 2021).

It is also noted in the same table that age is significantly correlated to hygienic practice along with hand hygiene (.357). This means that the older the individual, the better their hygienic practices and hand hygiene are. Young teenagers (12 to 15 years old) typically practiced good hygiene, although there was still evidence of bad status in numerous low- and middle-income countries. It is critical for health and other youth-centric services (such as education), evidence-based planning, priority setting, and disease prevention and intervention initiatives to comprehend how hygiene practices vary among adolescents in various Low- and Middle-Income Countries (Han et al., 2020).

The older the individual tends to accumulate information that they can use in their daily activities, hand washing might be one of them. Hand washing might have been retained in their mind because of its importance in preventing diseases. Regarding this, many of the Banki community's primary school students who learned essential personal hygiene advice also practiced appropriate personal hygiene. Additionally, it was clear that older kids demonstrated better personal hygiene habits than younger ones. Age was a factor in personal hygiene; older children had better personal cleanliness. This may have to do with how adaptable children grow as they age. Older children would better understand and be able to implement fundamental personal hygiene instructions than younger ones. This supports findings from a different study. Older children's personal hygiene is thought to be influenced by the active, passive, and assisted cues they watch in others and absorb into their own behavior. In addition, they are more adept than their younger counterparts at doing personal hygiene tasks, including brushing their teeth, bathing, and washing their hands with soap (Ahmadu et al., 2013).

The other variables under study, like sex (.211) and grade level (.180), yielded a significant relationship between hygienic practice and personal hygiene. This means that regardless of grade level and individual, their hygienic practices are the same whether male or female. The most significant factor influencing personal hygiene may be health education, which encourages good hygiene. Parents who are informed about good personal hygiene practices will also inform their offspring (Ahmadu et al., 2013).

Correlation Between Profile of the Respondents and Hygienic Practices Along Environment

On Primary Pupil Respondent's Profile and Extent of Hygienic Practices along Environmental Sanitation are shown in Table 5, one of the personal profiles of the primary pupil respondents like age (.177), sex (.131), grade level (.245), and ordinal position (-.009) bears no significant relationship with the overall extent of hygienic practices along environmental sanitation. These variables under study do not affect the hygienic practices of primary pupils. Whether old or young, male or female, whatever grade level, whether oldest or youngest, their hygienic practice along with personal hygiene are the same. On the contrary, Proper sanitation and the availability of enough drinking water are essential for maintaining personal hygiene and health. Consequently, there is a clear connection between health, sanitation, and water. Many diseases in impoverished nations have their

roots in the consumption of tainted drinking water, inappropriate disposal of human waste, poor environmental sanitation, and a lack of personal and food hygiene (Apate et al., 2019).

Table 5
Correlation between the Profile of the Pupils and their Hygienic Practices in terms of Socio-demographic Profile
*LEGEND: *. Correlation is significant at the 0.05 level (2-tailed).*

Profile	Hand Hygiene	Bathing and Grooming	Foot Hygiene	Toilet Hygiene	Overall
A. Personal Related Factors					
Age	.357*	0.062	0.201	0.084	.292*
Sex	0.155	0.242	0.060	0.101	0.211
Grade Level	0.269	-0.037	0.086	0.100	0.180
Ordinal Position	0.276	0.103	0.263	0.235	.317*
B. Parent/Guardian Related Factors					
Age	0.025	-0.076	0.036	-0.007	-0.005
Sex	-0.081	-0.190	-0.080	0.049	-0.122
Highest Educational Attainment	0.056	0.199	.298*	0.189	0.245
Family Monthly Income	0.273	0.111	0.101	0.172	0.258
Occupation	0.032	0.107	0.180	0.135	0.147

On Parents /Guardians Profile and Extent of Hygienic Practices Along Environmental Sanitation

It is worth noting that the highest educational attainment (.437) is significantly correlated to the overall extent of Hygienic practices along with environmental practices. Thus, individuals with the highest educational attainment tend to have better hygienic practices along with environmental sanitation. This could be the product of their learning while pursuing higher education. It was indicated that the most significant barrier to personal hygiene from the perspective of the respondents is laziness (94.6%), followed by lack of education (86.2%) and lack of time (76.5%). The fact that a large majority of people consider indolence and inertia as significant barriers to adherence to personal hygiene

practices is concerning. The lack of education and awareness regarding this subject also needs addressing on an urgent basis (Singh et al., 2023).

Further scrutiny of the table reveals that family monthly income correlates to the hygienic practices on environmental sanitation on type of toilet (.376). Hence, individuals with high family monthly income tend to have better hygienic practices along with the type of toilet. Family with high monthly incomes have the financial capability to acquire and utilize the most modern type of toilet for their convenience. In terms of this, sanitation has historically been adjusted to meet the needs of high-income countries. However, state-of-the-art designs in these populations have yet to be transplanted to the low- and middle-income populace. It is further maintained by diligently adhering to risk mitigation practices, precise definitions of success, and in-depth analysis to prevent or reduce possible failures (Hyun et al., 2021).

Similarly, family monthly income is also correlated to the hygienic practices on environmental sanitation along garbage collection and disposal (.376). Therefore, families with high family monthly income have better hygienic practices on environmental sanitation along garbage collection and disposal. Families with high monthly incomes prioritize the cleanliness of their environment through proper garbage collection and disposal, unlike those with low family incomes, whose priority is to earn a living. Thus, deficient hygiene habits were observed in the offspring of families affected by the main features of social inequality, who were more likely to perceive social rejection for this reason and less likely to consider their family as the most significant influence on their personal hygiene practices (Ramos-Morcillo et al., 2019).

However, the other variables like age (.210), sex (-.08), and occupation (.178) yielded no significant correlation with hygienic practices on environmental sanitation. Hence, young or old, male or female, with or without occupation, their hygienic practice on environmental sanitation is similar.

Table 6
Correlation between the Profile of the Pupils and their Hygienic Practices in terms of Environmental Sanitation

Profile	Toilet Type	Drainage Type	Garbage Collection and Disposal	Source of Drinking Water	Food Storage	Overall
A. Personal Related Factors						
Age	0.131	0.197	0.018	0.088	0.160	0.177
Sex	0.046	0.010	0.009	0.160	0.079	0.131
Grade Level	0.153	0.073	0.077	0.174	0.232	0.245
Ordinal Position	0.032	-0.186	0.034	0.041	-0.028	-0.009

B. Parent/Guardian Related Factors

Age	0.173	0.147	0.184	0.074	0.153	0.210
Sex	0.041	-0.242	0.070	-0.025	0.057	-0.018
Highest Educational Attainment	.401*	-0.041	0.148	.417*	0.276	.437*
Family Monthly Income	.376*	0.142	.376**	0.186	-0.160	0.121
Occupation	-0.144	-0.019	0.191	0.240	0.057	0.178

*LEGEND: *. Correlation is significant at the 0.05 level (2-tailed).*

Correlation Between the Respondents' Profile and the Overall Hygienic Practices

It is indicated that in Table 7, only the highest educational attainment bears a significant relationship with the overall hygienic practices (.001). It is alarming that a significant portion of the population views laziness and inertia as significant obstacles to maintaining personal hygiene habits. It was shown that respondents' perceptions of laziness, lack of information, and lack of time are the biggest impediments to personal hygiene (Singh et al., 2023).

No significant relationship was found between the overall hygienic practices and the following profile of the primary pupils like age (.058), sex (.178), grade level (.057), (and ordinal position (.390) At the endline compared to the baseline, the percentage of households practicing fundamental food safety measures, basic sanitation, excellent personal hygiene, and water safety increased significantly. Studies conducted across the globe have also demonstrated the beneficial effects of hygiene practice promotion on enhanced hygiene practices. The impact of health hygiene education on households' hygiene performance may be attributed to the fact that health education promotes behavioral change and raises awareness of good hygienic practices (Gizaw et al., 2020).

Table 7
Correlation between the Profile of the Pupils and their Overall Hygienic Practices

Profile	r-value	p-value	Interpretation
A. Personal Related Factors			
Age	0.270	0.058	Not Significant
Sex	0.194	0.178	Not Significant
Grade Level	0.271	0.057	Not Significant

Ordinal Position	0.130	0.390	Not Significant
B. Parent/Guardian Related Factors			
Age	0.161	0.263	Not Significant
Sex	-0.067	0.645	Not Significant
Highest Educational Attainment	.445*	0.001	Significant
Family Monthly Income	0.208	0.147	Not Significant
Occupation	0.202	0.159	Not Significant

*LEGEND: *. Correlation is significant at the 0.05 level (2-tailed).*

Based on the findings of this study, the proposed plan of action that aims to limit the incidence of helminthiasis and improve the hygienic practices of primary pupils can be seen in the table below and health education instructional materials (i.e., pamphlets, tarpaulins, and brochures) it will delve onto the indicators that garnered subpar compliance in their hygienic practices and environmental sanitation.

Table 8
Proposed plan of action to limit the incidence of helminthiasis and improve the hygienic practices of primary pupils.

Proposed Action Plan						
Activity/Programs	**Factors**	**Objectives**	**Strategies**	**Locust of Responsibility**	**Time Frame**	**Expected Outcomes**
1. Develop a Base of Support	• Personal Hygiene • Environmental Sanitation	To Develop and use partnerships to reach key stakeholders and share research findings	Make connections with significant community stakeholders for the purpose to present research findings. Collaborate with them to promote the information for health education.	• Teachers • Students • Parents • Stakeholders	1 month	Well-connected work force on improving hygienic practices

				Present a case-by-case narrative for operational approaches and design assessment alternatives in order to show how the resources can be used. Encourage the community to contribute suggestions on the research and to attend local seminars and demonstrations.			
2.	Create Health Education Materials	• Personal Hygiene • Environmental Sanitation	To educate the student on the Proper Personal Hygiene	Construct a product one-sheeters, brochures, a training presentation template, flyers, pamphlets, tarpaulins, posters, case studies, a media kit, website content, and a summary of the research report.	• WinS Coordinator • TWG • Teachers • Students • Barangay Health Workers • Guidance Counselor • School Head	Quarterly	Well Informed Students regarding Proper Personal Hygiene
3.	Create an animate	• Personal	To Develop a	Create a video presentation	• Teachers	Start of Scho	An animated health

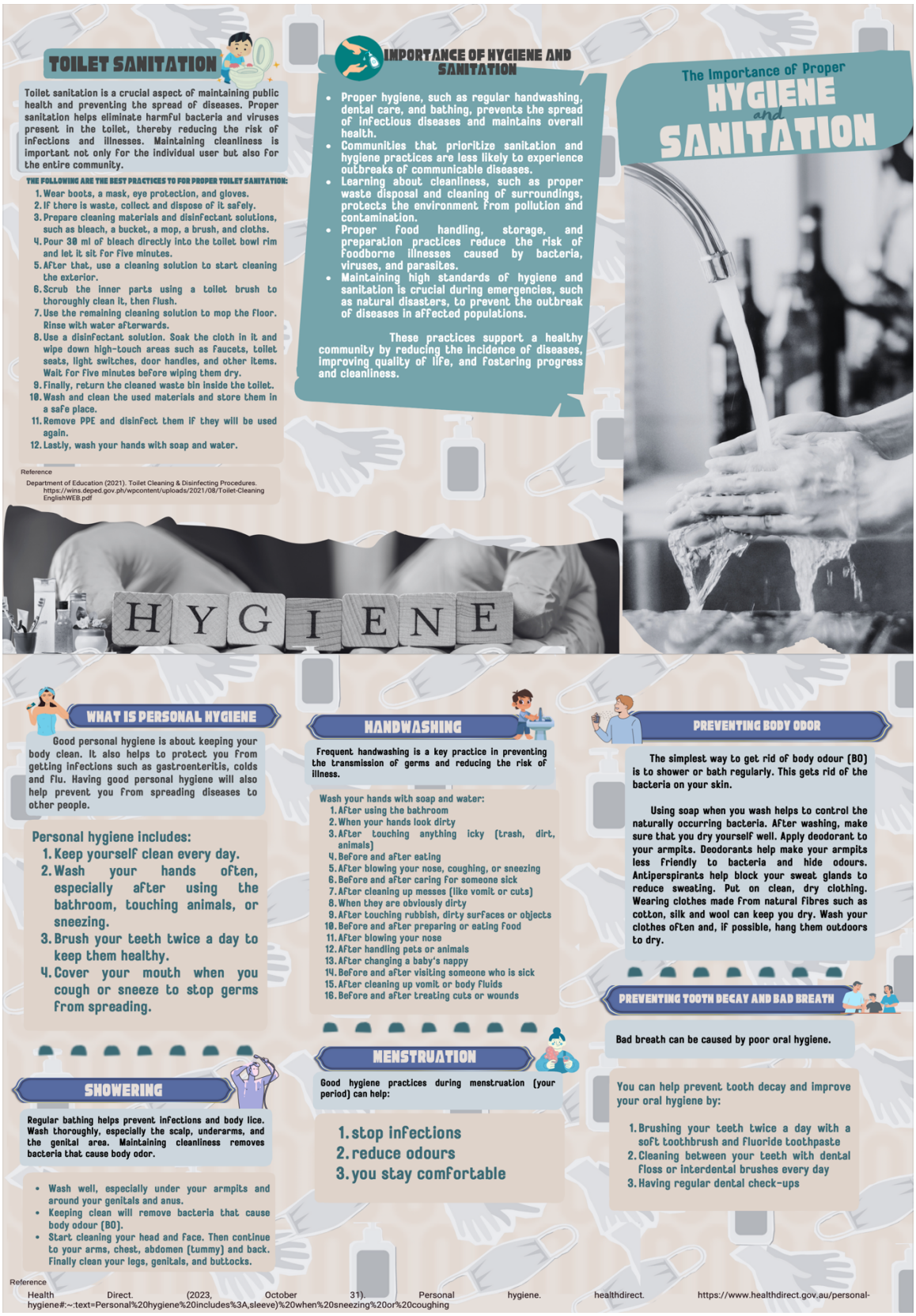
d presentation and demonstration	• Hygiene • Environmental Sanitation	Health Education Material that can be learned in a child-friendly way.	and demonstration of proper personal hygiene and environmental sanitation procedures for the community, share it on social media platforms, and use it in exhibits, conference presentations, and training sessions as needed.	• Students • Parents	ol Year	education video on hygienic practices
4. Conduct and Encouragement of Peer-to-Peer Exchanges	• Personal Hygiene • Environmental Sanitation	To disseminate knowledge and information regarding hygienic practices.	During seminars and webinars, arrange peer-to-peer exchanges and/or poster presentations to discuss findings, show how to follow hygiene guidelines correctly, go over lead implementer experiences, and get input from peers. Conducting group discussions among the	• Teachers • Students • Parents	Semi-Annually	Well informed students, parents and teachers regarding hygienic practices

			target audience with the research findings, health information needed for hygienic practices and updates with regards to the problem.			
5. Monitor and evaluate the integration and the use of the Health Education Tools throughout the community	• Personal Hygiene • Environmental Sanitation	To demonstrate proper waste segregation and waste disposal	Quantify reach by continuously tracking the number of attendees at workshops, training sessions, and webinars. Provide a standard evaluation form that tracks attendance, audience questions, and feedback, and any follow-up needed.	• School Head • Teachers • Students	Twice in a School Year	A systematic feedback system on the outcome of the programs conducted

In the proposed plan of action, it can be seen from the table that the activities are focused on information dissemination on health education, which includes factors such as Personal Hygiene and Environmental Sanitation. The programs/activities proposed are: *Develop a Base of Support* to demonstrate how the resources can be used and establish connections with essential community stakeholders. Then, a case-by-case narrative will be presented for operational approaches and design assessment alternatives. Finally, the Community should be encouraged to participate in local seminars and demonstrations and offer research suggestions. *Creation of Health Education Materials* by developing a media kit, website content, case studies, tarpaulins, posters, brochures, flyers, pamphlets, training

presentation templates, and one-sheeters for your product. *Create an Animated Presentation and Demonstration* by producing a film that serves as a community education tool, demonstrating good personal hygiene practices and environmental sanitation techniques. Share it on social media and utilize it for exhibits, conference presentations, and training sessions as required. *Conduct and Encourage Peer-to-Peer Exchanges* by organizing peer-to-peer exchanges and poster presentations during seminars and webinars to discuss findings, demonstrate correct adherence to hygiene guidelines, review lead implementer experiences, and solicit peer feedback. Hold group discussions among the target audience with the research findings, health information necessary for hygienic practices, and updates regarding the issue. Lastly, *Monitor and evaluate the integration and the use of health education tools throughout the Community* by tracking the number of people who attend workshops, training sessions, and webinars to determine the reach of your content. You may also use a standard evaluation form to keep track of audience questions, feedback, and any necessary follow-up.

Health Education Material
(Tarpaulin)



Health Education Material
(Brochure)

Conclusions

The overall extent of hygienic practices of primary pupil respondents is on the "Practiced level". This is a manifestation that primary pupils adhere to hygienic practices to maintain their health. Most primary pupil respondents belong to grade II, are eight years old, and are male; most are first-born in their respective families. In contrast, most of the parents/guardian respondents are in their late 30s, female, high school graduates, and unemployed with a monthly income ranging from Php 1,000- Php 3,000. Only the highest educational attainment relates significantly to the overall hygienic practices. When taken singly, ordinal position and age yielded a significant relationship between the extent of hygienic practices along personal hygiene and family monthly income, which is significantly correlated to the extent of hygienic practices along environmental practices. An action plan was developed using the data obtained from the results of this research to reduce the prevalence of helminthiasis and improve primary school students' levels of hygiene. It was mainly focused on information dissemination on health education and hygienic practices.

Recommendations

The researcher suggests that in order to improve primary school students' personal hygiene and environmental sanitation to a "highly practiced" level, they should have constant and unbroken enforcement of established hygiene practices, and parents and teachers should be continuously informed about the student's level of hygienic practices which resulted as "Practiced" level of extent and to improve their understanding of health hygiene education further, schools should provide parents and teachers with quarterly reinforcements in the form of webinars, in-house seminars, and training. It is essential to review activities and programs to identify areas for improvement periodically. The Institution's administrations should provide facilities and equipment for promoting and implementing hygienic practices in personal hygiene and environmental sanitation to reduce the risk of primary students contracting infections from the environment while also meeting international specifications and standards from the WASH program of UNICEF. To reduce the occurrence of soil-transmitted helminthiasis among the students, the Institution's administrations should regularly check the prevalence of helminthiasis in primary pupils and perform mass drug administration (MDA) every quarter. Educators should ensure participation from students by conducting a more engaging activity to lessen inertia and indolence from pupils in exercising hygiene practices. Another study should be carried out to gauge the level of hygienic practices in the various schools in neighboring municipalities to assess the level of hygiene and incidence of helminthiasis.

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