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Prevalence of Intestinal Parasitic Infection among Food vendors in Purok 1, Barangay Matina Gravahan, Davao City

An Institutional Research Presented to theResearch
and Publication Center of University of Mindanao
Davao City

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Prevalence of Intestinal Parasitic Infection among Food
vendors in Purok 1, Barangay Matina Gravahan, Davao City

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To Honorable Joel Santes and the rest of the Barangay Matina Personnel for allowing us to conduct the study in Purok 1, Barangay Matina Gravahan, Davao City.

To the University of Mindanao BSMT/MLS clinical instructors and faculty members; Earl Nicole N. Lucena, Maria Kristina Y. Navarro and Junelle P. Silguera, for assisting us in the scientific examination phase of this study.

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To all the participants of the study who willingly submitted their stool samples during the data collection and scientific examination phase of the study.

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ABSTRACT

Maslow's hierarchy of needs states that food is an essential physiological need. Foodconsumption is indeed vital, and food safety must always be observed. However, 600 million cases of food borne diseases such as parasitic infections are caused by unsafe food consumption. Thirty food vendors selling in Purok 1, Barangay Matina Gravahan, Davao City were examined for parasitic intestinal infections utilizing their stool samples. Among these participants, only one participant aged younger than 20 years while fifteen, six, five, and three are distributed in 21-30, 31-40, 41-50, and >51 age ranges, respectively. There were fifteen males and fifteen females who participated in the study. There were no parasitic eggs found in the samples of these participants, which indicates zero prevalence. This finding may be interpreted as a good indication that these food vendors have good hygienic and sanitary practices. Moreover, 75% of food stalls and establishments were sampled in this study indicating a lesser risk of intestinal parasitic food borne transmission.

Keywords:- *Food vendors, Food borne, Parasitic infection, Sanitary practices*

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CHAPTER ONE

INTRODUCTION

Food is an essential and physiological need that people must have to functionand survive. In general, a man could not act and think appropriately with an empty stomach. Besides attaining this particular physiological need that Maslow identified, we must also make sure that what we eat will benefit us. However, this ideal illustration of food consumption does not apply to everybody everywhere; sometimes, what we eat harms us. About 600 million cases of food borne diseases, with 420 000deaths are caused by unsafe food consumption worldwide.[1] Proper handling of food from storage to serving is vital in securing the safety of those people who will consumethe food. In a study conducted by Kwol et al. in 2020, the respondents' food safety knowledge positively influences their attitude and attitude, influencing their perceptionof personal hygiene, kitchen hygiene, and disease control measure. [2]

Knowledge is an essential factor in alleviating food-borne disease transmission. Having the educational background relevant to food safety will help address food-borne diseases. [3-5] Sometimes knowing food safety is not enough, especially if this knowledge does not reflect strict hygienic practices. [4] If food handlersare aware of the possible diseases that can be acquired through ingestion of contaminated food, they would somehow appreciate the importance of following safety protocols in food preparation processes. A total of 172 out of 4,612 or 3.73% of food handlers in Northwest Iran were parasitically infected. [6] This particular data suggests for a risk in the disease transmission. The transmission dynamics however vary from one setting to another. Thus, the conduct of this study will fill the gap of knowing other possible transmission dynamics that are yet to be discovered and correlated with the presence or absence of food borne-related infections among the food handlers near the University of Mindanao, Matina campus.

A. Review of Related literature

Studies on food-borne diseases agree that these infections worldwide are predominantly acquired through unsafe and contaminated food ingestion. [1-6] Food preparation is vital in ensuring the food that we eat is safe and clean. In a study conducted in 2019, 116 out of 288 vegetables were tested positive with food-borne parasites like *Ascaris lumbricoides*. [7] This data shows the need for public health improvement, especially with the products t sold in the general market. Having parasitically contaminated vegetables, which source might probably from contaminated soil or water, food handlers, especially those who cater to the numberof people to feed, must also have regular checkups and sanitary training to avoid further transmission. Nevertheless, having a valid medical certificate does not justify the absence of intestinal parasites. Some medically certified food handlers with validmedical certificates were tested positive with different parasites particularly *E. histolytica*, *G. lamblia* and *A. lumbricoides* in the study conducted by Kamau et al. in2012. [8]

B. Food Handlers and Sanitary practices

Food handlers are indeed a potential source of food-borne infections. Thus, hygienic and sanitary control must be observed in the food industry, even in the hospital, where food is considered vital in the treatment process. A high prevalenceof parasitic intestinal infection was found among the food handlers in a tertiary care hospital in Makkah, Saudi Arabia, in the year 2009. [9] One way of identifying the risk of transmitting food-borne infections from a carrier food handler is to know their handhygiene practices. The area beneath fingernails acquires the most microorganisms, which is also the most challenging area to sanitize. [10]

C. Food-borne infections

The increasing rate of food-borne infections is linked with climate change and different environmental factors.[11-13] In some studies, one health program was conducted to address the challenges brought by food-borne diseases. [12,14] The observable changes in the climate can highly increase the vulnerability of water systems toward food-borne and water-borne diseases. [11] Intestinal parasitic infections are considered a common public health concern in the world. These general concerns are commonly associated with poor hygienic practices and sanitation. [2-5, 15] An effective way of preventing foodborne parasitic infection is by improving water, sanitation, and hygiene (WASH). [15-17] The source of water is indeed vital in the transmission of possible water-borne diseases. Human activities are also significant in knowing potential sources of contamination in the water supply. [17-18] In a systematic review done in Ethiopia, a clear variation in the prevalence of human intestinal protozoan parasitic infections was shown. The reason for these differences were believed to be due to their varying environmental, geographical and behavioral characteristics. [19]

The outbreaks on food-borne diseases are prevalent among developing countries. [20] Some of these food-borne parasitic infections belong to the 13 major neglected tropical diseases (NTDs) and are seen in over one third of the world's human population. [21-24] Food-borne parasitic infections like ascariasis and trichuriasis, which are also soil-transmitted helminthiases (STHs), are considered significant health concerns especially among school-age children. [21-22] Out of 17 regions in the Philippines, sixteen of which are endemic for STHs having a prevalence of more than 50%. [25 A] 10-year nationwide survey conducted among children aged 2-14 years yielded 50 to 90% prevalence. Moreover, out of 22 million children in the Philippines, approximately 30% have been infected with more than one species of soil-transmitted helminths. [26-27] There are a lot of factors to consider in addressing this concern. Proper sanitary food handling is regarded as an integral way of eradicating the spread of food-borne infections. [28-30]

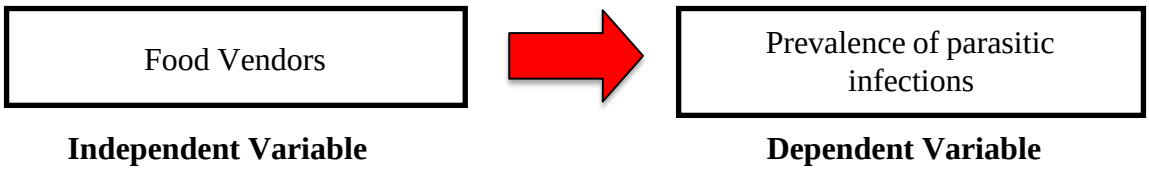

Fig. 1: Conceptual Framework

D. Statement of the Problem

This study aims to know the presence or absence of intestinal parasitic infection among the food vendors in Purok 1, Barangay Matina Gravahan, Davao City.

Specifically, the study aims to answer these questions:

- What is the demographic profile of the food vendors in terms of age and sex?
- What is the prevalence rate of parasitic infection among the food vendors in Gravahan, Matina, Davao City?

E. Significance of the Study

The following are the specific beneficiaries of the study:

- **General Public**. This study will increase the awareness of the community on the role proper sanitary practices in preventing food borne diseases.
- **Community Health Workers.** The data that will be obtained in this study will help the community health workers to implement policies and protocols for proper food sanitary practices.
- **University of Mindanao Administration.** This study will serve as basis for establishing the University guidelines in proper food handling.
- **Researchers.** The study will pave the way to more significant researches involving food preparation and different food borne transmission dynamics.

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F. Scope and Limitations

The study focuses in identifying possible parasitic infections among food vendors in Purok 1, Barangay Matina Gravahan, Davao City. The study will only facilitate those food vendors that are currently selling foods in stalls and establishments near the University of Mindanao, Matina Campus. The results of the study cannot be used in securing for a medical certificate and will be treated as strictlyconfidential.

G. Definition of Terms

- **Food.** Refers to a physiological need which sometimes can possibly be a source ofinfection.
- **Food borne diseases.** Pertains to the types of infections that are acquired via ingestion of contaminated food.
- **Food preparation.** Connotes the complete process of preparing food which will beevaluated in this particular study.
- **Hygiene.** Refers to the condition or act of maintaining good health and avoidingdiseases by means of cleanliness.
- **Infection.** Connotes the state of acquiring a specific pathogen that needs to betreated accordingly.
- **Sanitation.** Refers to the condition related to public health safety. This particular condition will be identified and evaluated in this study.
- **Direct Fecal Smear (DFS).** It is a common intestinal-parasitic diagnostic technique which will be utilized in the study.

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CHAPTER TWO

METHOD

This chapter discusses the research design, participants, locale, analysis and ethical considerations of the study.

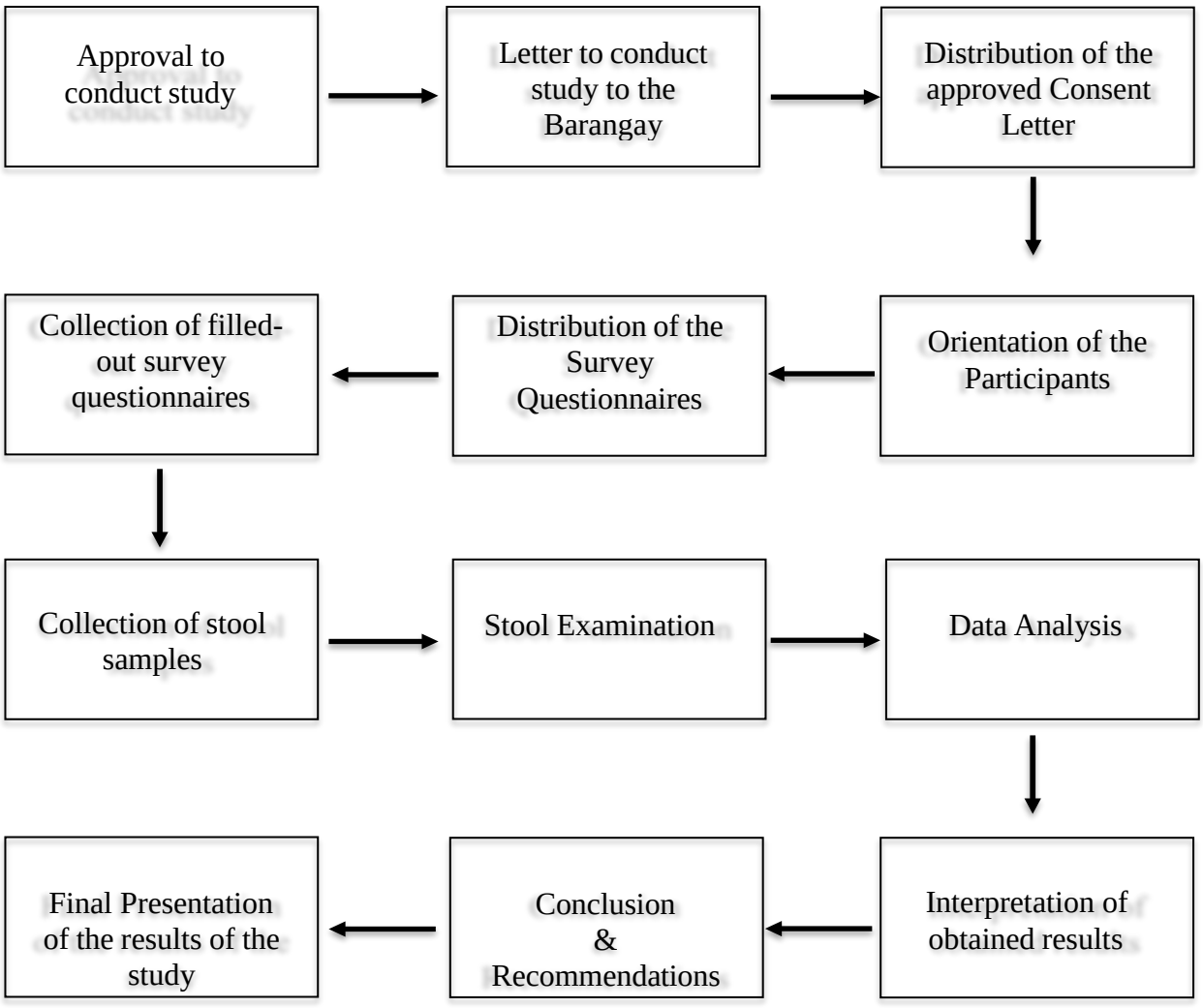

Fig. 2: The General Workflow of the Study

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A. Design

This study implies a quantitative descriptive research design utilizing convenient sampling. The presence or absence of intestinal parasitic infection among the identified participants of study was the basis of applying this particular study design. 31-32

B. Locale

The locale of the study will be the food stalls and eatery near the University of Mindanao, Matina Campus. The specific study area is in Purok 1, Barangay Matina Gravahan, Davao City. This is where most of the University of Mindanao students and employees buy food before and after going to the campus.

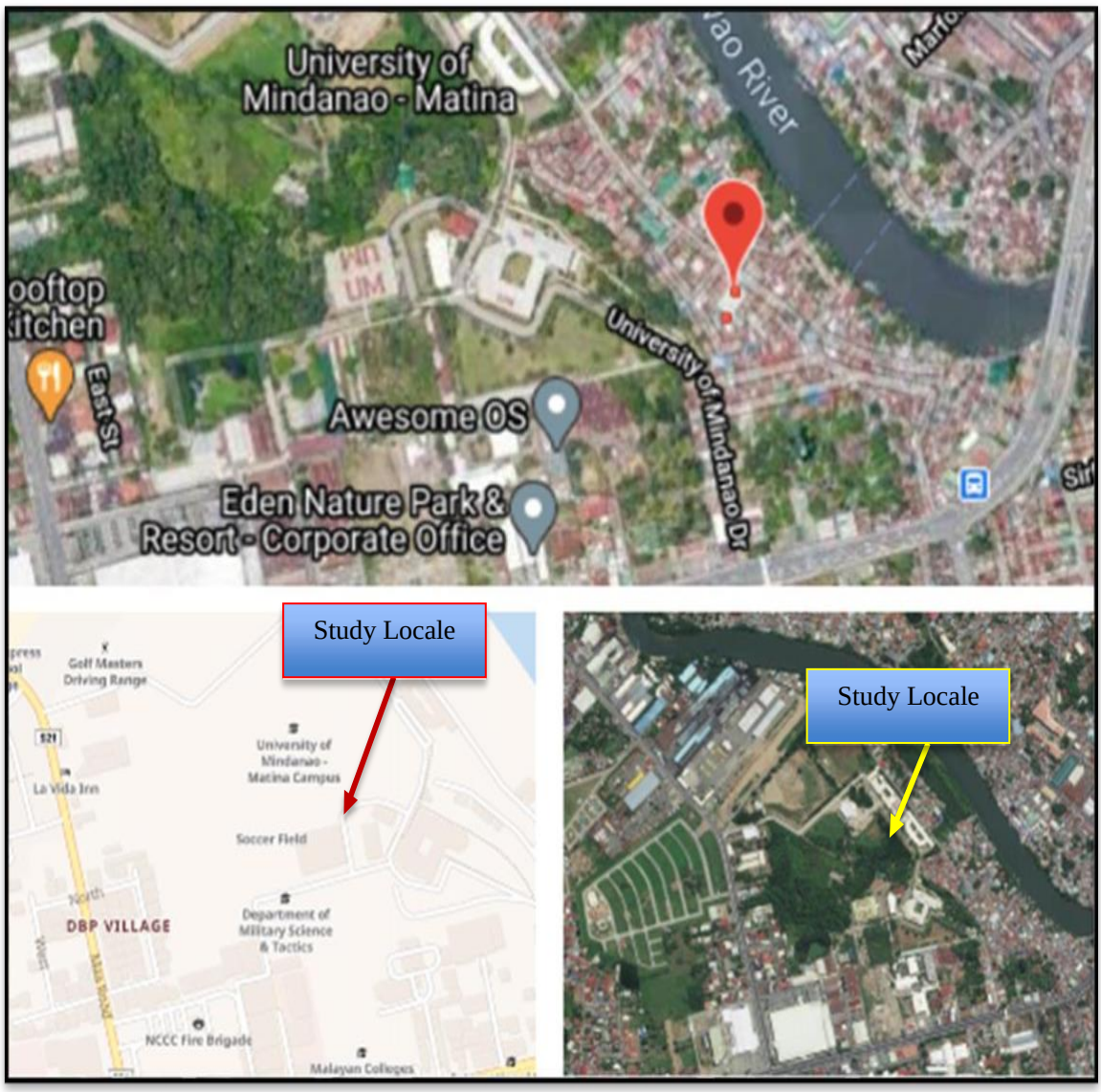

Fig. 3: The Locale of the Study

C. Procedure

➢ *Direct Fecal Smear*

Direct fecal smearing is a routine procedure in fecal analysis done in the clinical laboratory. Though direct fecal smearing is routinely done in analyzing fecal samples,the method has also limitations in terms of quantifying the eggs of the identified intestinal parasites. There are new methods in identifying intestinal parasitic infection other than direct fecal smearing that are much more sensitive. However, the utilizationof direct fecal smearing is still commonly practice because of cost efficiency (12).

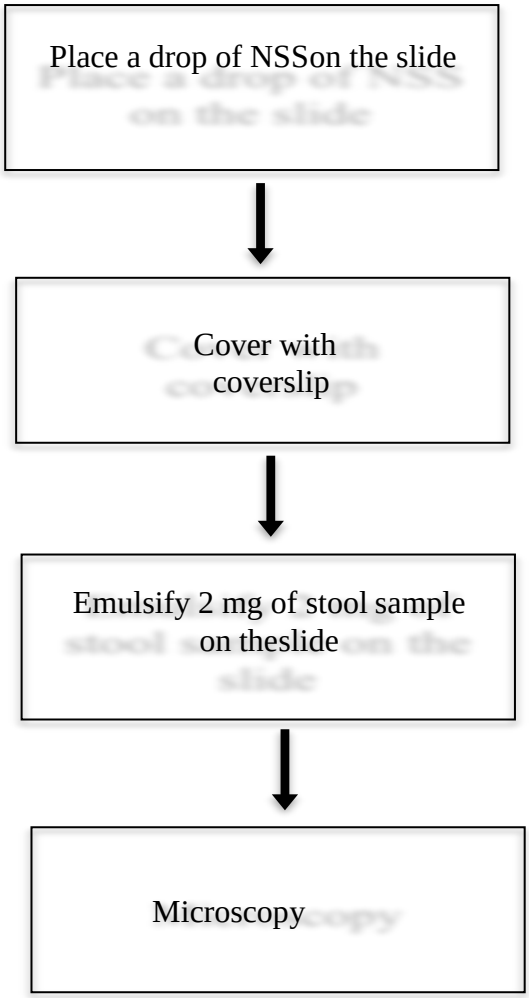

Fig. 4: Direct Fecal Smear Procedure

D. Ethical Considerations

➢ *Biowaste Management*

The researchers followed a strict protocol of proper waste disposal of infectious wastes. All used materials (gloves, masks, applicator sticks and specimen bottles) were properly placed in a yellow plastic bag and labeled as "infectious waste". The used glass slides were soaked in a 10% diluted sodium hypochlorite and were disposed in a leaked and sharp proof container labeled with infectious material signage.

➢ *Data Privacy and Confidentiality*

The participants' record such as their names, age, and sex, are kept confidential as what is stipulated in the consent letter that were distributed amongst them. This research study observes the guidelines of RA 10173 also known as the "Data Privacy Act of 2012".

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CHAPTER 3
RESULTS AND DISCUSSION

This chapter presents the obtained results from the examination of stool samples among the food vendors of Purok 1, Barangay Matina Gravahan, Davao City.

Table 1 Shows that all the thirty food vendors (Codes 01 to 30) in purok 1,

Px. Code	Age	Sex	Result
01	31	F	No Intestinal Parasitic Ova Seen
02	21	F	No Intestinal Parasitic Ova Seen
03	40	F	No Intestinal Parasitic Ova Seen
04	27	M	No Intestinal Parasitic Ova Seen
05	21	F	No Intestinal Parasitic Ova Seen
06	24	M	No Intestinal Parasitic Ova Seen
07	27	F	No Intestinal Parasitic Ova Seen
08	32	M	No Intestinal Parasitic Ova Seen
09	28	F	No Intestinal Parasitic Ova Seen
10	34	M	No Intestinal Parasitic Ova Seen
11	27	M	No Intestinal Parasitic Ova Seen
12	50	M	No Intestinal Parasitic Ova Seen
13	50	F	No Intestinal Parasitic Ova Seen
14	50	M	No Intestinal Parasitic Ova Seen
15	19	F	No Intestinal Parasitic Ova Seen
16	37	F	No Intestinal Parasitic Ova Seen
17	23	F	No Intestinal Parasitic Ova Seen
18	23	M	No Intestinal Parasitic Ova Seen
19	50	M	No Intestinal Parasitic Ova Seen
20	54	F	No Intestinal Parasitic Ova Seen
21	64	M	No Intestinal Parasitic Ova Seen
22	22	M	No Intestinal Parasitic Ova Seen
23	24	F	No Intestinal Parasitic Ova Seen
24	45	F	No Intestinal Parasitic Ova Seen
25	29	M	No Intestinal Parasitic Ova Seen
26	21	M	No Intestinal Parasitic Ova Seen
27	29	M	No Intestinal Parasitic Ova Seen
28	51	M	No Intestinal Parasitic Ova Seen
29	21	F	No Intestinal Parasitic Ova Seen
30	45	F	No Intestinal Parasitic Ova Seen

Barangay Matina Gravahan were negative in intestinal parasitic ova.

The variation of these research participants in terms of age and sex were also illustrated in this table.

Table 2: Summary of Food vendors according to age

<20	21-30	31-40	41-50	>51
1	15	6	5	3

Table 2 presents the uneven distribution of the research participants' age in different ranges. Only one participant aged younger than 20 years while fifteen, six, five and three are distributed in 21 to 30, 31 to 40, 41 to 50, and more than 51 age ranges respectively.

Table 3: Summary of Food Vendors According to Sex

FEMALE	MALE
15	15

Table 3 illustrates that the research participants are equally distributed in terms of sex.

The result of the study shows that the intestinal parasitic infection among the thirty food vendors sampled in Purok 1 Barangay Matina Gravahan has zero prevalence rate. The data suggests that the food vendors who participated in the study managed to keep themselves intestinal-parasitically free. This is an indication of low or absence of intestinal parasitic infection among all vendors in the locale considering that nine out of twelve or 75% of food stalls and establishments were sampled.

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CHAPTER FOUR

CONCLUSION AND RECOMMENDATION

The zero intestinal parasitic infection among the thirty food vendors in Purok 1, Barangay Matina-Gravahan, Davao City indicates a lesser chance of food borne parasitic transmission in the area provided that nine out of twelve or 75% of food stalls and establishments were sampled. The data suggests that these food handlers may have good hygienic and sanitary practices which is imperative in food preparation. Food preparation practices are indeed vital in making sure that public health concerns such as food borne illnesses will be addressed accordingly. Upon completing the study, some recommendations were drawn by the researchers: 1. The knowledge, attitude and practices regarding food borne parasitic infections of these food vendors and handers must be considered. 2. Sophisticated and much sensitive coprological examinations must be added. 3. Food borne infections other than parasitic infections, like salmonella and shigella should be identified.

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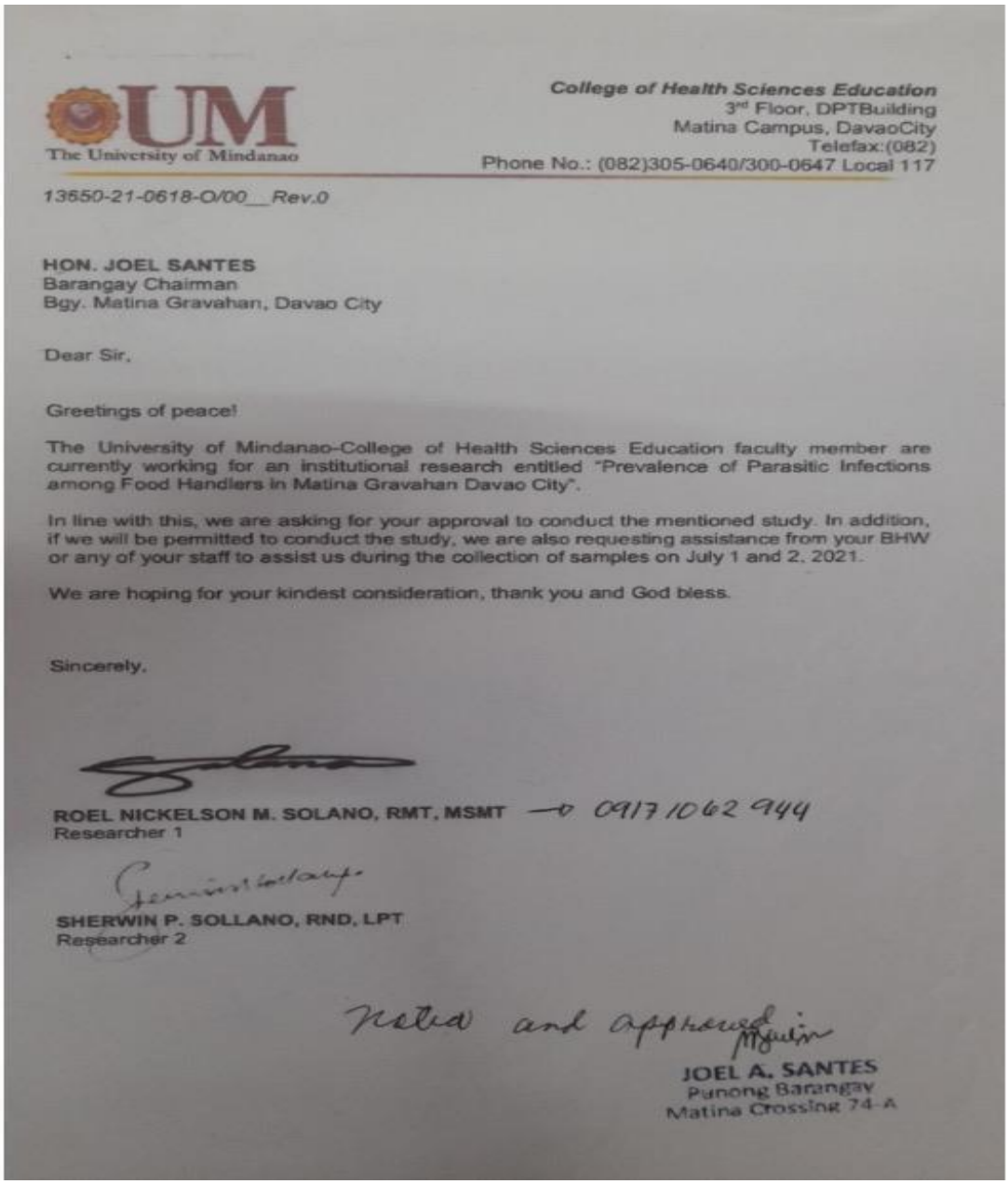
APPENDICES

APPENDIX A

Letter to Conduct Research Study



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Phone No.: (082)305-0640/300-0647 Local 117

13650-21-0618-O/00__Rev.0

HON. JOEL SANTES
Barangay Chairman
Bgy. Matina Gravahan, Davao City

Dear Sir,

Greetings of peace!

The University of Mindanao-College of Health Sciences Education faculty member are currently working for an institutional research entitled "Prevalence of Parasitic Infections among Food Handlers in Matina Gravahan Davao City".

In line with this, we are asking for your approval to conduct the mentioned study. In addition, if we will be permitted to conduct the study, we are also requesting assistance from your BHW or any of your staff to assist us during the collection of samples on July 1 and 2, 2021.

We are hoping for your kindest consideration, thank you and God bless.

Sincerely,

ROEL NICKELSON M. SOLANO, RMT, MSMT — 0917 1062 944
Researcher 1

SHERWIN P. SOLLANO, RND, LPT
Researcher 2

Noted and approved

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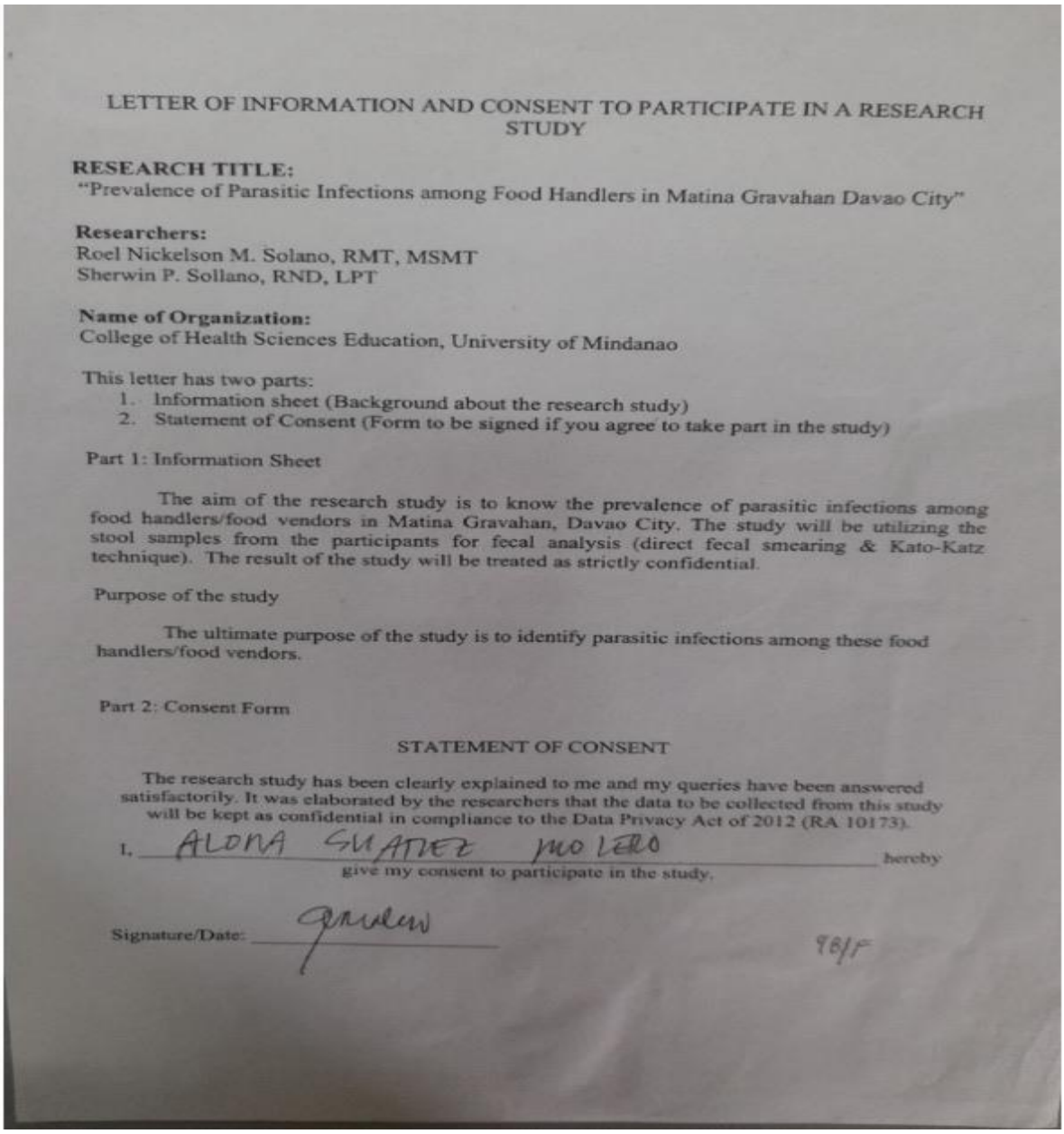
APPENDIX B

Letter of Information and Consent



LETTER OF INFORMATION AND CONSENT TO PARTICIPATE IN A RESEARCH STUDY

RESEARCH TITLE:
"Prevalence of Parasitic Infections among Food Handlers in Matina Gravahan Davao City"

Researchers:
Roel Nickelson M. Solano, RMT, MSMT
Sherwin P. Sollano, RND, LPT

Name of Organization:
College of Health Sciences Education, University of Mindanao

This letter has two parts:
1. Information sheet (Background about the research study)
2. Statement of Consent (Form to be signed if you agree to take part in the study)

Part 1: Information Sheet

The aim of the research study is to know the prevalence of parasitic infections among food handlers/food vendors in Matina Gravahan, Davao City. The study will be utilizing the stool samples from the participants for fecal analysis (direct fecal smearing & Kato-Katz technique). The result of the study will be treated as strictly confidential.

Purpose of the study

The ultimate purpose of the study is to identify parasitic infections among these food handlers/food vendors.

Part 2: Consent Form

STATEMENT OF CONSENT

The research study has been clearly explained to me and my queries have been answered satisfactorily. It was elaborated by the researchers that the data to be collected from this study will be kept as confidential in compliance to the Data Privacy Act of 2012 (RA 10173).

I, ALONA SUAREZ JUO LERO hereby give my consent to participate in the study.

Signature/Date: _____ 9/8/F

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APPENDIX C

Gantt Chart

Steps	April	May	June	July	August
Finalization of study protocol and approval to conduct institutional research study					
Data Gathering (Sampling)					
Data Analysis					
Presentation of Final Results					

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APPENDIX D

MINUTES OF OUTLINE DEFENSE

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Minutes of Outline Defense

Time: 01:30 PM
Venue: Zoom Technology

Components	Topic	Comments/ Corrections & Suggestions
1. Title	"Food sanitary practices in relation to the prevalence of intestinal parasitic infections among the Food Vendors near the University of Mindanao"	"You may change the title as you remove some of the variables and focus on the profiling of parasitic infections among food vendors" Agreed by the three panel members.
2. Instruments	Questionnaire	"Remove the usage of questionnaires in the instrumentation" "You may need to follow a long process of making your questionnaire valid, just focus in profiling the food vendors". "Remove the variable that may involve the usage of questionnaire" Agreed by the three panel members.

Prepared by:

ROEL NICKELSON M. SOLANO, RMT, MSMT

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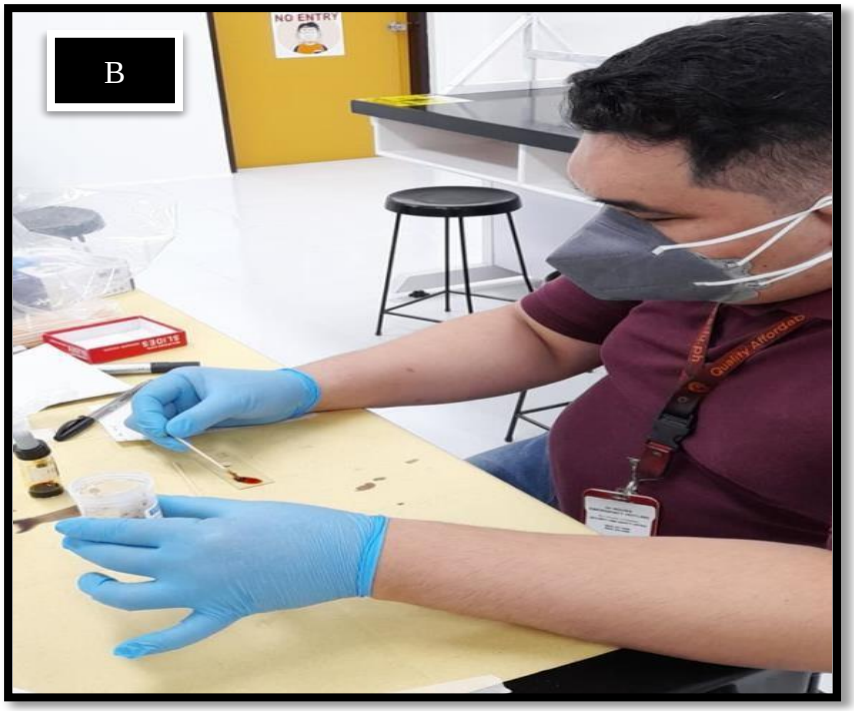
APPENDIX E

ACTUAL PROCESSING OF STOOL SAMPLES



Gross Examination of Stool sample (A) physical evaluation of feces (B) Smearing

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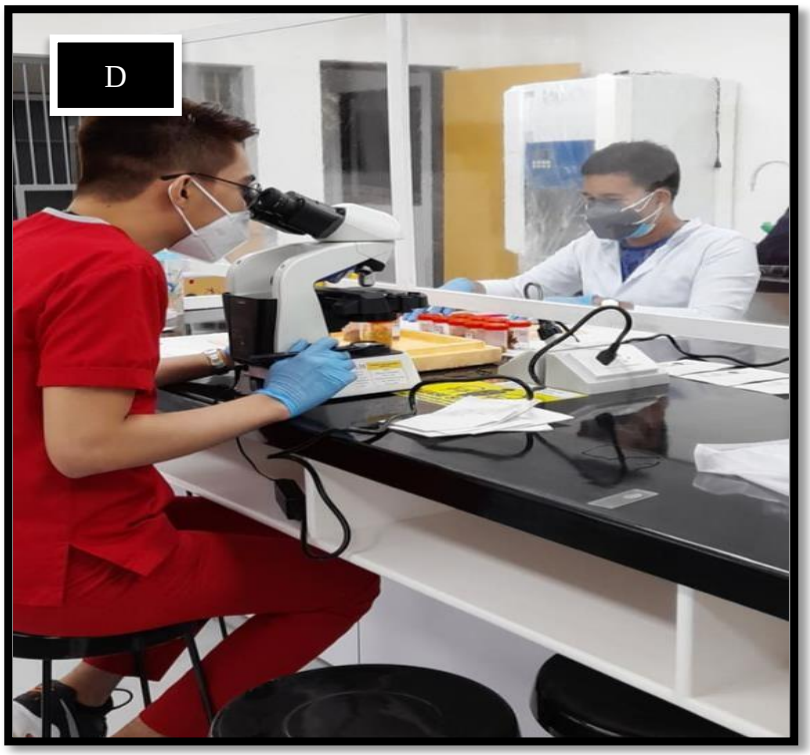
MICROSCOPIC EXAMINATION



Microscopic examination of feces (C) Individual microscopic examination (D) Group evaluation of microscopic examination results.

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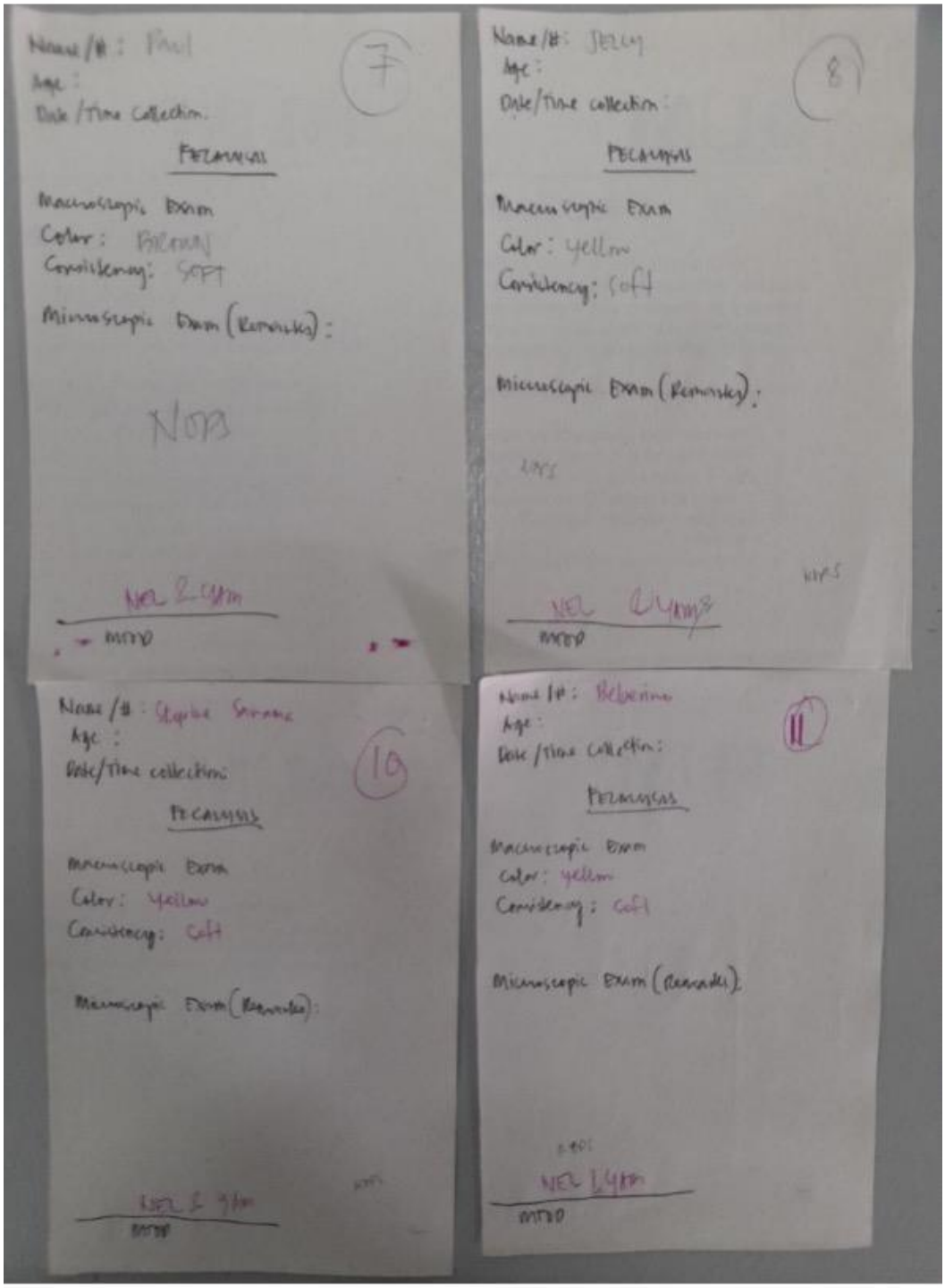
APPENDIX F

ACTUAL FECALYSIS RESULT



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