RESEARCH ARTICLE: Extent of Implementation of the Zero Open Defecation Program in Selected Barangays of Indanan, Sulu

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*ABSTRACT***.** This study assessed the extent of implementation of the Zero Open Defecation Program in selected barangays of Indanan, Sulu for the Fiscal Year 2025. With 100 samples taken through non-probability sampling method via purposive sampling, and with the use of weighted mean, standard deviation, t-test for independent samples, One-way ANOVA, and Pearson's r, this study reveals the following findings: 1) Of the 100 respondents, mostly belonged to 26 years old and above, female, graduated high school, and with an average monthly income of 5,001 to 10,000; 2) On the average, the extent of implementation of ZODP in selected barangays in Indanan, Sulu is rated agree or with moderate level of awareness; 3) Generally, variable age and educational level showed a significant difference in the extent of the implementation of ZODP while no significant difference when grouped by gender and average monthly income; 4) A significant correlation among the subcategories subsumed under the extent of the implementation of ZODP in selected barangays of Indanan, Sulu is highly correlated; 5) The findings suggest the need for targeted interventions to maximize program effectiveness taking considerations the age and educational attainment. Interventions must be tailored with the needs of targeted communities to maximize effectiveness.

KEYWORDS: Zero Open Defecation Program (ZODP), Implementation, Sanitation

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Introduction

Open defecation continues to be a serious public health issue, particularly in poor regions with inadequate sanitary facilities. The practice not only spreads diseases but also jeopardizes community safety and dignity, particularly for women and children. In response to this urgent problem, many initiatives have been implemented worldwide, with the Zero Open Defecation (ZOD) Program emerging as a key strategy aimed at ending open defecation and promoting proper sanitation practices (JMP, 2022). This study aims to assess the ZOD Program's effectiveness and impact in the chosen barangays of Indanan, Sulu, highlighting its benefits and identifying areas that require improvement.

While 57% of the world's population (4.6 billion) used a safely managed sanitation service, 33% (2.7 billion) used private sanitation facilities connected to sewers from which wastewater was

treated, and 21% (1.7 billion) used toilets or latrines where excreta were safely disposed of in situ, 88% of the world's population (7.2 billion) used at least a basic sanitation service in 2022 (WHO, 2024).

Sustainable Development Goal 6 (SDG 6) was dedicated to the provision of clean water and sanitation, with the objectives of eliminating open defecation and ensuring that all individuals have access to adequate and equitable sanitation and hygiene. Similar to how ethical challenges in adopting AI expose discrepancies between policy objectives and practical application (e.g., bias and exclusion; (Chavez et al., 2024), the mandate of SDG 6 necessitates the tackling of systemic inequities—like gendered or socioeconomic barriers—to genuinely achieve the goal of 'leaving no one behind'. The needs of women, girls, and people in vulnerable situations ought to be prioritized (UNITED NATIONS, 2019).

Even with advancements in hygiene and sanitation in the Philippines, open defecation continues to be a problem, especially in rural regions such as the Bangsamoro Autonomous Region in Muslim Mindanao. The WHO (2024) reports that more than 1.5 million children under five die each year from diarrhea associated with inadequate sanitation. Elements like poverty, lack of education, cultural practices, and insufficient infrastructure play a role in the problem. Analogous obstacles were observed in modular learning throughout the pandemic, as low-income and less-educated parents faced difficulties with programs that necessitated resource access and behavioral modification (Murro et al., 2023). These parallels indicate that the Zero Open Defecation program in rural Sulu encounters systemic challenges stemming from socioeconomic and awareness gaps.

In order to eradicate open defecation and implement proper sanitation management, DOH claims that a shift in approach is required. It involves a shift in collective behavior, improved public services, and robust supply networks. According to educational research, participative techniques, such as parental support strategies that adapt to children's needs and cultural contexts, result in higher compliance and sustainability (Chavez, Adalia, et al., 2023; Chavez, 2023). This shows that the ZOD program's effectiveness in Indanan may similarly depend on localized, community-driven solutions rather than top-down enforcement. People, groups, and businesses must all have access to improved infrastructure and services, as well as public oversight of behavior compliance (UNICEF, 2017).

As part of the initiative, community members identify their sanitation needs and implement situation-specific solutions. Involving communities at the grassroots level is essential because it fosters sustainability and ownership and makes them active participants in their sanitation and health outcomes. This is consistent with results from education policy research, which shows that programs fail when beneficiaries lack engagement or awareness (Bucoy et al., 2024). For example, just as teachers' understanding of their legal rights improved through participatory training, ZOD's success in Indanan relies on culturally adapted education and collective buy-in—turning passive recipients into empowered stakeholders.

The Zero Open Defecation Program played a pivotal role in enhancing public health and sanitation in communities such as Indanan, Sulu. Through an evaluation of its execution and outcomes, this study seeks to yield valuable insights capable of driving policy improvements and promoting sustainable sanitation initiatives. Beyond its health benefits, eliminating open defecation is critical for upholding human dignity and promoting community development.

Research Questions

This study aimed to assess the extent of implementation of the Zero Open Defecation Program in selected barangays of Indanan, Sulu.

1. What is the demographic profile of the respondents in terms of:
   1.1 Age;
   1.2 Gender;
   1.3 Educational Attainment; and
   1.4 Average Monthly Income?
2. What is the extent of implementation of Zero Open Defecation Program in selected barangays of Indanan, Sulu in terms of:
   2.1 Awareness of the Zero Open Defecation Program;
   2.2 Implementation of the Zero Open Defecation Practices;
   2.3 Health and Environmental impact; and
   2.4 Community Feedback and Suggestion?
3. Is there a significant difference on the extent of implementation of Zero Open Defecation Program when data are grouped according to demographic profile in terms of
   3.1 Age;
   3.2 Gender;
   3.3 Educational Attainment, and
   3.4 Average Monthly Income?
4. Is there a significant correlation among the subcategories subsumed under the extent of Zero Open Defecation Program in selected barangays of Indanan, Sulu?

Literature Review

Foreign Studies and Literature

Global Prevalence and Impact of Open Defecation. Open defecation remains a major global concern, with around 1 billion people worldwide still indulging in the practice, resulting in approximately 842,000 deaths per year from sanitation-related causes. According to WHO and UNICEF figures from 2010, 17% of the world's population, including India, Indonesia, and China, does not have access to adequate sanitation. Countries with high levels of open defecation confront significant public health concerns, such as high child mortality, poverty, and malnutrition.

Sanitation Access and Public Health Risks. In the Philippines, 19 million people (23% of the population) do not have access to sanitary restrooms. Despite advances in rural regions, where sanitation coverage increased from 45% in 1990 to 71% in 2015, the National Sustainable Sanitation Plan (NSSP) aims for all barangays to attain zero open defecation certification by 2022. The absence of basic sanitation adds to health crises, with diseases such as cholera and diarrhea hitting vulnerable people, particularly children. This global sanitation challenge emphasises the necessity of Zero Open Defecation (ZOD) activities worldwide.

Effectiveness of Sanitation Campaigns. Patil et al. (2014) investigated India's Total Sanitation Campaign in Madhya Pradesh and found that active community participation and educational initiatives led to significant improvements in sanitation practices. Similarly, Sara and Graham (2014) investigated sanitation practices in rural Tanzania, discovering that diarrheal infections account for 7% of under-five fatalities and identifying behavioral characteristics that support or impede latrine use. Their cross-sectional survey of 1,000 families highlights the significance of attitudes and incentives in changing sanitation behavior. UNICEF (2016) has stated that education and local engagement are essential for successful Zero Open Defecation (ZOD) operations.

Challenges in Rural Areas and Cultural Barriers. Trimmer et al. (2022) discovered that, despite efforts in Ghana, open defecation is still prevalent, particularly in rural regions due to

poverty and insufficient infrastructure. In Nepal, Bhatt et al. (2019) found that cultural beliefs, religious perspectives, and social norms all had a significant impact on sanitation behavior, particularly among women. Busienei et al. (2019) reported comparable cultural and economic barriers in Kenya.

Socioeconomic Factors and Government Roles. According to Ukpabi (2024), open defecation causes waterborne illnesses and environmental damage, increasing the economic burden due to higher healthcare costs and lower production. Paul et al. (2022) investigated the socioeconomic and demographic factors that influence open defecation in Haiti, emphasizing the importance of regional wealth disparities and tailored interventions, such as individual toilet financing in rural areas and communal toilets in urban slums, in achieving long-term open defecation-free status. Their research also emphasizes the need of empowering women and youth through mass media and community-based education. Jubril (2022) further argues that poor sanitation infrastructure and a lack of government support are more significant barriers than literacy in perpetuating open defecation.

Sustainability and Community Empowerment. Delaire et al. (2022) questioned the enduring sustainability of Ghana's ODF (Open Defecation Free) designation, highlighting the necessity for ongoing assistance. Fatty (2021) underlined the importance of community empowerment and behavior modification in the elimination of open defecation, as seen in Gambia and Sierra Leone.

Local Studies and Literature

Introduction and Context. Open defecation remains a major public health concern in the Philippines, particularly in rural and low-income areas. Before the COVID-19 outbreak in November 2019, only 11% of the country's 42,000+ barangays had achieved ZOD status. According to the World Bank, over 3.5 million Filipinos continue to lack access to toilets, with open defecation practiced by 11% of urban and 20% of rural families. This scenario promotes the spread of diseases such as cholera, typhoid, diarrhea, and hepatitis. In response, the Department of Health (DOH) launched a national sustainable sanitation program targeting ZOD attainment by 2025, aligning with the United Nations Sustainable Development Goal of ensuring equitable sanitation access for all by 2030. However, low finance and limited local government capacity continue to limit progress.

Financial and Social Barriers. Latip et al. (2021) discovered that financial constraints had a significant impact on the performance of ZOD projects, since many households were unable to acquire sanitary supplies and were forced to prioritize other expenses. Similarly, Chavez (2020) emphasizes how systemic economic disparities increase vulnerabilities among marginalized groups, demonstrating how financial limitations and disorganized community support can impede the delivery of essential services—a pattern seen in education, healthcare, and other public health efforts. This broader context emphasizes the difficulties encountered by ZOD projects, as budgetary constraints and uneven community adaption in rural and low-income areas sometimes limit access to sanitation infrastructure. Latip et al. confirmed that financial constraints exist in 16 Kabuntalan barangays.

Community Practices and Perceptions. Latip et al. (2021) also investigated waste disposal patterns in Kabuntalan and discovered that, while some homes used proper sanitation, many were unaware of the health dangers associated with open defecation. This awareness gap illustrates how deeply ingrained attitudes impact sanitation practices, a difficulty that has been documented in other public health efforts. Similar to how gender-based humor normalizes stereotypes under the guise of harmless humor (Chavez, Lamorinas, et al., 2023), cultural norms in rural barangays may

perpetuate open defecation by portraying it as an acceptable or unavoidable practice. Without focused behavior modification methods, such beliefs can endure, perpetuating cycles of inadequate sanitation despite viable alternatives.

Culturally Relevant Interventions. Galvin (2014) highlights Community-Led Total Sanitation (CLTS) as a successful participatory technique for eradicating open defecation, emphasizing its reliance on local cultural engagement—a factor often neglected in top-down initiatives. This oversight is supported by the Magna Carta study, which demonstrated that disregarding socio-cultural dimensions led to diminished policy compliance (Chavez, Gregorio, et al., 2023). Calva and Batoto (2023) discovered comparable issues among Indigenous Peoples in GIDAs, with economic hardship and isolation hindering sanitation efforts. In areas like Indanan, Sulu, where poverty and traditions dictate behavior, culturally appropriate solutions such as CLTS are critical for long-term transformation.

Implementation Gaps. Through formative research, Pfadenhauer and Rehfuess (2015) emphasized the necessity of culturally adapted sanitation solutions. As with the results of research on AI-assisted learning (Inoferio et al., 2024), effective implementation of ZOD also requires context-specific strategies that tackle behavioral obstacles using adaptive and participatory methods such as CLTS. Similar to how AI tools individualized math teaching to lessen anxiety, ZOD programs need to customize their strategies according to local socio-cultural contexts for sustainable adoption.

Similar to the uneven execution of pandemic recovery programs for female educators, where vulnerable groups were frequently left behind due to inconsistent assistance (Chavez, Del Prado, et al., 2023), the Zero Open Defecation (ZOD) initiative may suffer discrepancies in barangay-level resource distribution. Some communities receive appropriate materials and training, while others are overlooked, increasing disparities in sanitation access. This is consistent with Molina et al. (2021), who highlighted insufficient monitoring systems and uneven local government capability as key obstacles in Water, Sanitation, and Hygiene (WASH) projects, indicating systematic problems with equitable program implementation.

Methodology

1. *Research Design*

This study employed a quantitative descriptive research design. This approach yields numerical data that can identify trends and patterns throughout a population, thereby supporting evidence-based decision-making. This design allows researchers to objectively measure variables and quantify relationships, reducing biases associated with qualitative approaches (Unimrkt, 2023).

2. *Research Participants*

The primary data for this study were collected from residents of selected barangays in Indanan, Sulu, who served as key respondents to address the research questions. To strengthen the theoretical and conceptual foundations of the study, supplementary information was acquired from internet-based research and relevant publications. Data collection was conducted using structured questionnaires, with a total of 200 participants selected from various barangays in Indanan, Sulu. The sample was designed to reflect a diverse representation of the community, employing purposive sampling to assure adequate inclusion of all relevant subgroups, thereby enhancing the accuracy and depth of the findings. The study population comprised community members aged 18 years and above, barangay officials, health workers, and individuals associated with the ZODP.

3. *Research Instruments*

The primary data collection tool utilized in this study was a survey questionnaire designed to assess the implementation level of the ZODP in selected barangays of Indanan, Sulu. The research instrument comprised five distinct sections. Section I gathered demographic information from respondents, including age, gender, educational background, and average monthly income. Section II sought information on respondents' awareness of the ZODP, its health and environmental effects, as well as community feedback and recommendations. This section contained 20 items measured on a 5-point Likert scale, where 5 represented strong agreement and 1 indicated strong disagreement.

4. *Data Gathering Procedure*

The first step in the data collection method for this study was a thorough analysis of the body of research on the ZODP, including theoretical frameworks and prior studies. The proposal was sent to the thesis adviser for evaluation and comments when the literature review was finished. The updated proposal was sent to the Office of the Dean for approval after taking into account the adviser's recommendations and making sure the research plan complied with academic standards.

A validity test was carried out to make sure the research tools accurately recorded the ZODP-related information, attitudes, and behaviors—including those of non-participants. The next step was pilot testing, in which a small sample of ten non-participants were given the instrument twice, three to five days apart. Cronbach's Alpha was computed for the survey items during the pilot test in order to evaluate the consistency of the instrument. To confirm that the items assessing the same construct were associated, a value of.70 or higher was deemed acceptable.

After pilot testing was finished, the Office of the Dean was consulted to make sure the study adhered to the academic standards and ethical requirements of the school. Following this approval, a request for authorization to conduct the research was made to the Barangay Chairman, guaranteeing the cooperation and consent of local authorities.

After gathering all of the responses, the researcher created a dataset and prepared it for statistical analysis. The Statistical Package for the Social Sciences (SPSS) was then used to examine the data that had been gathered.

5. *Data Analysis*

This study utilized a combination of descriptive and inferential statistical methods to analyze the collected data. Initially, frequency distributions and percentages were calculated to outline the demographic characteristics of the respondents and to quantify the participation of households or individuals in the ZODP across each barangay. Subsequently, the mean and standard deviation were applied to evaluate the degree of ZODP implementation, providing measures of average compliance, sanitation practices, and other relevant indicators. To examine significant variations in ZODP implementation based on gender, an independent sample t-test was conducted. Additionally, Analysis of Variance (ANOVA) was employed to assess differences in program effectiveness among groups categorized by age, educational background, and income level. Furthermore, the Pearson Product-Moment Correlation Coefficient (Pearson r) was employed to identify significant relationships between subcategories within the ZODP implementation metrics in the selected barangays of Indanan, Sulu. This correlation analysis also explored potential associations between the accessibility of sanitation facilities and the adherence to ZODP practices.

Ethical considerations are fundamental in ensuring the reliability and validity of this research. The data collection, analysis, and interpretation adhered to established ethical standards, ensuring the protection of participants' rights and the integrity of the study. The principles observed include: non-maleficence, as no harm was inflicted on respondents; respect for dignity and rights, ensuring their autonomy was upheld; confidentiality and anonymity, with measures to

protect data and respondent identities; objectivity, by preventing bias in discussions and analyses; informed consent, with voluntary participation and prior consent; and ethics clearance, by complying with all requirements of the Ethics Committee.

Results and Discussion

Question 1. What is the demographic profile of the respondents in terms of age, gender, educational attainment, and average monthly income?

Age

Table 1.1 Demographic profile of the respondents in terms of age.

Age	Frequency	Percent
18 and below	7	7.0
19-25	33	33.0
26 and above	60	60.0
Total	**100**	**100.0**

Table 1.1 displays the demographic distribution of respondents by age. As shown, the majority of the 100 respondents (60%) belong to the 26-and-above age group, suggesting a higher representation of older individuals within the sample. A smaller segment (33%) falls within the 19–25 age range, while a minimal proportion (7%) consists of those aged 18 or younger. This distribution reflects a diverse representation across age groups, spanning from young adults to middle-aged adults.

Gender

Table 1.2 Demographic profile of the respondents in terms of gender.

Gender	Frequency	Percent
Male	27	27.0
Female	73	73.0
Total	**100**	**100.0**

Table 1.2 presents the gender distribution of the respondents, indicating that out of 100 participants, 27 (27%) identified as male and 73 (73%) as female. The findings show a pronounced gender imbalance, with female respondents outnumbering males by a substantial margin of 46 percentage points. This significant disparity may influence the study's outcomes, as it suggests potential variations in perspectives, experiences, or needs concerning the zero open defecation program between male and female participants.

Educational attainment

Table 1.3 Demographic profile of the respondents in terms of educational attainment.

Educational Attainment	Frequency	Percent
No formal education	3	3.0
Primary education	19	19.0
Secondary education	46	46.0
Tertiary education	32	32.0
Total	**100**	**100.0**

Table 1.3 presents the demographic distribution of respondents based on educational attainment. The data reveals that among the 100 respondents, 3 (3%) possessed no formal education, 19 (19%) were elementary graduates, 46 (46%) had completed high school, and 32 (32%) attained tertiary education.

The findings indicate that the majority of respondents attained secondary-level education. Furthermore, the distribution of responses across educational attainment levels demonstrates notable variation. This implies that educational attainment may play a role in influencing the extent of implementation of the Zero Open Defecation Program in the selected barangays of Indanan, Sulu.

Average monthly income

Table 1.4 Demographic profile of the respondents in terms of monthly income.

Monthly Income	Number of Respondents	Percent
5,000 and below	36	36.0
5,001-10,000	43	43.0
10,001 and above	21	21.0
Total	**100**	**100.0**

Table 1.4 presents the demographic profile of respondents categorized by average monthly income. The data reveal that among the 100 respondents, 36 respondents (36.0%) earned 5,000 and below, indicating that a significant portion of the sample earns at or below this threshold, 43% of respondents (43%) earns 5,001-10,000 and only 21 respondents (21.0%) earn above 10,001, representing the smallest group in this distribution.

The data reveals a concentration of respondents in the lower to middle-income brackets, with 79% of participants earning 10,000 or below. This suggests a potential economic vulnerability among the sample population. The highest percentage of respondents (43%) falls within the 5,001-10,000-income range, indicating that while many individuals are slightly above the lowest income level, a considerable number still face financial constraints. This further indicates that this variable may have an influence on the extent of implementation of Zero Open Defecation Program in selected barangays of Indanan, Sulu.

Question 2. What is the extent of implementation of Zero Open Defecation Program in selected barangays of Indanan, Sulu in terms of Awareness of the Zero Open Defecation Program, Implementation of the Zero Open Defecation Practices, Health and Environmental impact, and Community Feedback and Suggestion?

Awareness of the Zero Open Defecation Program

Table 2.1 Extent of implementation of Zero Open Defecation Program in selected barangays of Indanan, Sulu in terms of Awareness of the Zero Open Defecation Program.

Awareness of the Zero Open Defecation Program	N	Mean	S.D.	Rating
1. I am aware of the Zero Open Defecation program.	100	3.9400	.91916	Agree
2. I know the key objectives of the Zero Open Defecation program.	100	3.7400	.89465	Agree
3. I have heard about the Zero Open Defecation program through community or media channels.	100	3.8700	.86053	Agree
4. I understand the importance of eliminating open defecation for public health.	100	4.1400	.77876	Agree
5. I believe that the Zero Open Defecation program has a positive impact on improving sanitation in my community.	100	4.1200	.78212	Agree
Total Weighted Mean	**100**	**3.9620**	**.71333**	**Agree**

Scale Legend	*Range Scale*	*Descriptive equivalent*	*Interpretation*
5	*4.50 – 5.00*	*Strongly Agree (SA)*	*Very high level of awareness*
4	*3.50 – 4.49*	*Moderately Agree (MA)*	*Moderately high level of awareness*
3	*2.50 – 3.49*	*Agree (A)*	*Moderate level of awareness*
2	*1.50 – 2.49*	*Moderately Disagree (D)*	*Moderately low level of awareness*
1	*1.00 – 1.49*	*Strongly Disagree (SD)*	*Very low level of awareness*

Table 2.1 presents the degree of implementation of Zero Open Defecation Program in selected barangays of Indanan, Sulu in terms of Awareness of the Zero Open Defecation Program. The findings indicate an overall mean score of 3.9620 and a standard deviation of .71333 indicating that respondents generally rated this subcategory as Agree and reflect a moderate level of awareness of the ZODP.

Specifically, statement number 4 "I understand the importance of eliminating open defecation for public health." achieved the highest mean score of 4.1400, suggesting strong understanding of the health implications. In contrast, statement number 2 "I know the key objectives of the Zero Open Defecation program." recorded the lowest mean score of 3.7400, indicating that respondents may be less familiar with the program's specific objectives.

Based on the findings, it shows a moderate level of awareness on ZODP in selected barangays which indicate that future interventions should focus on clearly articulating the program's aims and benefits to enhance community participation and achieve better outcomes.

Implementation of the Zero Open Defecation Practices

Table 2.2 Extent of implementation of Zero Open Defecation Program in selected barangays of Indanan, Sulu in terms of Implementation of the Zero Open Defecation Practices.

Implementation of the Zero Open Defecation Practices	N	Mean	S.D.	Rating
1. The Zero Open Defecation program is effectively implemented in my community.	100	3.6200	.96169	Agree
2. Most households in my community have access to proper sanitation facilities.	100	3.6300	.94980	Agree
3.There is sufficient government support and infrastructure to promote Zero Open Defecation in my area.	100	3.4900	1.11460	Neither Agree Nor Disagree
4. The community actively participates in activities aimed at eliminating open defecation.	100	3.7200	.86550	Agree
5. I believe that the efforts to eliminate open defecation in my area are sustainable in the long run.	100	4.0400	.69515	Agree
Total Weighted Mean		**3.7000**	**.79162**	**Agree**

Scale Legend	*Range Scale*	*Descriptive equivalent*	*Interpretation*
5	*4.50 – 5.00*	*Strongly Agree (SA)*	*Very high level of awareness*
4	*3.50 – 4.49*	*Moderately Agree (MA)*	*Moderately high level of awareness*
3	*2.50 – 3.49*	*Agree (A)*	*Moderate level of awareness*
2	*1.50 – 2.49*	*Moderately Disagree (D)*	*Moderately low level of awareness*
1	*1.00 – 1.49*	*Strongly Disagree (SD)*	*Very low level of awareness*

Table 2.2 presents the degree of implementation of Zero Open Defecation Program in selected barangays of Indanan, Sulu in terms of Implementation of the Zero Open Defecation Practices. The findings indicate a total mean score of 3.7000 and a standard deviation of .79162 indicating that respondents generally rated this subcategory as Agree and reflect a moderate level of awareness of the ZODP.

Specifically, statement number 5 "I believe that the efforts to eliminate open defecation in my area are sustainable in the long run." achieved the highest mean score of 4.0400 indicating optimism about the program's long-term impact. In contrast, statement number 1 "The Zero Open Defecation program is effectively implemented in my community." recorded the lowest mean score of 3.6200 suggesting some doubts about the program's current effectiveness.

In general, respondents may believe the program has potential for long term success but see rooms for improvement in its current activity implementation. Factors such as insufficient resources, logistical challenges, or a need for improved community engagement which shows the findings as moderate level of awareness on implementation of the zero open defecation practices.

Health and Environmental impact

Table 2.3 Extent of implementation of Zero Open Defecation Program in selected barangays of Indanan, Sulu in terms of Health and Environmental impact.

Health and Environmental impact	N	Mean	S.D.	Rating
1. The Zero Open Defecation program has improved public health by reducing the spread of diseases in my community.	100	4.0300	.73106	Agree
2. The implementation of the Zero Open Defecation program has led to a cleaner and healthier living environment in my area.	100	3.9200	.82487	Agree
3. I believe that reducing open defecation helps improve the overall sanitation and hygiene in my community.	100	4.1900	.73437	Agree
4. The Zero Open Defecation program has contributed to a decrease in water contamination and improved water quality in my area.	100	3.9600	.72363	Agree
5. I have noticed a reduction in environmental pollution since the implementation of the Zero Open Defecation program.	100	3.9800	.69602	Agree
Total Weighted Mean	**100**	**4.0160**	**.63033**	**Agree**

Scale Legend	*Range Scale*	*Descriptive equivalent*	*Interpretation*
5	*4.50 – 5.00*	*Strongly Agree (SA)*	*Very high level of awareness*
4	*3.50 – 4.49*	*Moderately Agree (MA)*	*Moderately high level of awareness*
3	*2.50 – 3.49*	*Agree (A)*	*Moderate level of awareness*
2	*1.50 – 2.49*	*Moderately Disagree (D)*	*Moderately low level of awareness*
1	*1.00 – 1.49*	*Strongly Disagree (SD)*	*Very low level of awareness*

Table 2.3 presents the degree of implementation of Zero Open Defecation Program in selected barangays of Indanan, Sulu in terms of Health and Environmental Impact. The findings indicate an overall mean score of 4.0160 and a standard deviation of .63033 indicating that respondents generally rated this subcategory as Agree and reflect a moderate level of awareness of the ZODP indicates a general positive perception.

Specifically, statement number 3 “I believe that reducing open defecation helps improve the overall sanitation and hygiene in my community.” achieved the highest mean score of 4.1900 reflecting a strong belief in the program’s positive impact on sanition and hygiene. In contrast, statement number 2 “The implementation of the Zero Open Defecation program has led to a cleaner and healthier living environment in my area.” recorded the lowest mean score of 3.9200 suggesting a slightly less strong perception of the program’s direct effect on the environment.

The data suggests a generally positive perception on ZODP’s health impact. While the belief in the program’s positive effect on sanitation is strong, the perceived impact on the living environment is slightly less pronounced which shows the findings as moderate level of awareness on health and environmental impact.

Community feedback and suggestion

Table 2.4 Extent of implementation of Zero Open Defecation Program in selected barangays of Indanan, Sulu in terms of Community Feedback and Suggestion.

Community Feedback and Suggestion	N	Mean	S.D.	Rating
1. The community has been adequately informed about the goals and benefits of the Zero Open Defecation program.	100	3.5700	1.02745	Agree
2. I believe the Zero Open Defecation program has positively impacted the behavior and attitudes of people in my community regarding sanitation.	100	3.8500	.82112	Agree
3. Community members are actively involved in the Zero Open Defecation program, including maintaining sanitation practices.	100	3.7300	.91954	Agree
4. I think more community-based activities or workshops would help improve understanding and participation in the Zero Open Defecation program.	100	4.1100	.68009	Agree
5. I believe the government should provide more resources and support to ensure the continued success of the Zero Open Defecation program in my community.	100	4.3800	.74914	Agree
Total Weighted Mean	**100**	**3.9280**	**.66151**	**Agree**

Scale Legend	*Range Scale*	*Descriptive equivalent*	*Interpretation*
5	*4.50 – 5.00*	*Strongly Agree (SA)*	*Very high level of awareness*
4	*3.50 – 4.49*	*Moderately Agree (MA)*	*Moderately high level of awareness*
3	*2.50 – 3.49*	*Agree (A)*	*Moderate level of awareness*
2	*1.50 – 2.49*	*Moderately Disagree (D)*	*Moderately low level of awareness*
1	*1.00 – 1.49*	*Strongly Disagree (SD)*	*Very low level of awareness*

Table 2.4 presents the degree of implementation of Zero Open Defecation Program in selected barangays of Indanan, Sulu in terms of Community Feedback and Suggestion. The findings indicate an overall mean score of 3.9280 and a standard deviation of .66151 indicating that respondents generally rated this subcategory as Agree and reflect a moderate level of awareness of the ZODP.

Specifically, statement number 5 "I believe the government should provide more resources and support to ensure the continued success of the Zero Open Defecation program in my community." achieved the highest mean score of 4.3800 suggesting a need for increased government support. In contrast, statement number 1 "The community has been adequately informed about the goals and benefits of the Zero Open Defecation program" recorded the lowest mean score of 3.5700 indicating a perceived lack of adequate information dissemination.

Community feedback reveals a moderate level of knowledge of the ZODP, however there is still room for growth. The significant need for increased government resources, combined with the perceived need for improved community education, emphasizes the importance of closing these gaps to ensure the program's long-term viability. To do this, strategic efforts should focus on securing extra financing and implementing focused communication initiatives to increase public understanding of the program's objectives, benefits, and participation criteria.

Question 3. Is there a significant difference on the extent of implementation of Zero Open Defecation Program when data are grouped according to demographic profile in terms of age, gender, educational attainment and average monthly income?

Grouped By Age

Table 3.1 Difference on the extent of implementation of Zero Open Defecation Program when data are grouped

SOURCES OF VARIATION		Sum of Squares	Df	Mean Square	F	Sig.	Description
Awareness of the Zero Open Defecation Program	Between Groups	3.619	2	1.810	3.754	.027	Significant
	Within Groups	46.756	97	.482			
	Total	50.376	99				
Implementation of the Zero Open Defecation Practices	Between Groups	2.906	2	1.453	2.384	.098	Not Significant
	Within Groups	59.134	97	.610			
	Total	62.040	99				
Health and Environmental impact	Between Groups	6.859	2	3.430	10.244	.000	Significant
	Within Groups	32.475	97	.335			
	Total	39.334	99				
Community Feedback and Suggestion	Between Groups	5.352	2	2.676	6.837	.002	Significant
	Within Groups	37.969	97	.391			
	Total	43.322	99				

*Significant alpha 0.05

according to demographic profile in terms of age.

Table 3.1 displays data indicating a significant difference in the extent of implementation of the ZODP when analyzed by age as a demographic variable. The table reveals that the F-ratios and corresponding P-values associated with the program's implementation show statistical significance across most subcategories at the .05 alpha level, except for the specific dimension of zero open defecation practices. This finding suggests that age influences perceptions regarding the extent of ZODP implementation.

Consequently, it can be concluded with reasonable certainty that the hypothesis asserting "There is no significant difference on the extent of implementation of Zero Open Defecation Program when data are grouped according to demographic profile in terms of age," is rejected.

Grouped By Gender

Table 3.2 Differences on the extent of implementation of Zero Open Defecation Program when data are grouped

SOURCES OF VARIATION	Groupings	N	Mean	S.D.	Mean Difference	t	Sig.	Description
Awareness of the Zero Open Defecation Program	Male	27	4.0074	.74520	.06220	.552	.459	Not Significant
	Female	73	3.9452	.70574				
Implementation of the Zero Open Defecation Practices	Male	27	3.6519	.93083	-.06596	4.145	.044	Significant
	Female	73	3.7178	.74000				
Health and Environmental impact	Male	27	3.9407	.69684	-.10309	.737	.393	Not Significant
	Female	73	4.0438	.60667				
Community Feedback and Suggestion	Male	27	3.9481	.77379	.02760	2.081	.152	Not Significant
	Female	73	3.9205	.62070				

*Significant alpha 0.05

according to demographic profile in terms of gender.

Table 3.2 displays the data on the significant differences in the implementation extent of the ZODP when categorized by demographic profiles in terms of gender. As indicated in the table, the mean differences and P-values across all sub-categories under the extent of ZODP

implementation were examined. With the exception of the variable Implementation of Zero Open Defecation Practices, none of the other variables showed statistical significance at the alpha level .05.

Nevertheless, it can be concluded with reasonable certainty that the variable age does not play a significant mediating role in the extent of implementation of the ZODP. Consequently, the hypothesis stating, "There is no significant difference in extent of implementation of ZODP demographic profile in terms of gender," is accepted.

Educational Attainment

Table 3.3 Difference on the extent of implementation of Zero Open Defecation Program when data are grouped

SOURCES OF VARIATION		Sum of Squares	Df	Mean Square	F	Sig.	Description
Awareness of the Zero Open Defecation Program	Between Groups	7.927	3	2.642	5.975	.001	Significant
	Within Groups	42.449	96	.442			
	Total	50.376	99				
Implementation of the Zero Open Defecation Practices	Between Groups	4.323	3	1.441	2.397	.073	Not Significant
	Within Groups	57.717	96	.601			
	Total	62.040	99				
Health and Environmental impact	Between Groups	3.989	3	1.330	3.612	.016	Significant
	Within Groups	35.345	96	.368			
	Total	39.334	99				
Community Feedback and Suggestion	Between Groups	5.319	3	1.773	4.479	.005	Significant
	Within Groups	38.002	96	.396			
	Total	43.322	99				

*Significant alpha 0.05

according to demographic profile in terms of educational attainment.

Table 3.3 displays the data on the significant differences in the implementation extent of the ZODP when categorized by demographic profiles, specifically educational attainment. The table includes the calculated F-ratios and corresponding P-values pertaining to the program's implementation extent. Notably, all subcategories under this dimension—except for Implementation of the Zero Open Defecation Practices—demonstrate significance at an alpha level of .05. This indicates that while respondents' educational backgrounds vary, their perceptions of the implementation extent of Zero Open Defecation Practices do not significantly differ.

This finding suggests that higher educational attainment does not necessarily influence respondents' perceptions of the program's implementation extent. Nevertheless, it can be concluded that educational attainment plays a significant mediating role in the variation of perceived implementation levels of Zero Open Defecation Practices. Consequently, the null hypothesis stating, "There is no significant difference in the extent of implementation of Zero Open Defecation Program when data are grouped according to demographic profile in terms of educational attainment," is rejected.

Average Monthly Income

Table 3.4 Differences on the extent of implementation of Zero Open Defecation Program when data are grouped according to demographic profile in terms of average monthly income.

SOURCES OF VARIATION		Sum of Squares	Df	Mean Square	F	Sig.	Description
Awareness of the Zero Open Defecation Program	Between Groups	1.151	2	.576	1.134	.326	Not Significant
	Within Groups	49.225	97	.507			
	Total	50.376	99				
Implementation of the Zero Open Defecation Practices	Between Groups	.121	2	.060	.095	.910	Not Significant
	Within Groups	61.919	97	.638			
	Total	62.040	99				
Health and Environmental impact	Between Groups	.078	2	.039	.097	.908	Not Significant
	Within Groups	39.256	97	.405			
	Total	39.334	99				
Community Feedback and Suggestion	Between Groups	.222	2	.111	.250	.779	Not Significant
	Within Groups	43.099	97	.444			
	Total	43.322	99				

*Significant alpha 0.05

Table 3.4 displays the data regarding the significant difference in the implementation extent of the ZODP when categorized by demographic profile, specifically average monthly income. As indicated in the table, the F-ratios and corresponding P-values associated with the program's implementation extent are not statistically significant at the .05 alpha level. This suggests that while respondents' average monthly incomes vary, their perceptions of the program's implementation extent do not significantly differ. Consequently, higher income does not necessarily grant respondents a distinct perspective on the implementation of Zero Open Defecation Practices compared to those with lower incomes, and vice versa.

Thus, it can be concluded that the variable of average monthly income does not mediate significant differences in the perceived extent of the program's implementation. Accordingly, the hypothesis stating, “There is no significant difference in the extent of implementation of Zero Open Defecation Program when data are grouped according to demographic profile in terms of average monthly income,” is accepted.

Question 4. Is there a significant correlation among the subcategories subsumed under the extent of Zero Open Defecation Program in selected barangays of Indanan, Sulu?

Table 4 Correlation among the sub-categories subsumed under the extent of Zero Open Defecation Program in

Variables		Pearson r	Sig.	N	Description
Dependent	**Independent**				
Awareness of the Zero Open Defecation Program	Implementation of the Zero Open Defecation Practices	.670**	.000	100	High
	Health and Environmental impact	.687**	.000	100	High
	Community Feedback and Suggestion	.683**	.000	100	High

*Correlation Coefficient is significant at alpha .05 Correlation Coefficient Scales Adopted from Hopkins, Will (2002): 0.0-0.1=Nearly Zero; 0.1-0.30=Low; .3-0.5 0=Moderate; .5-0.7-0=High; .7-0.9= Very High; 0.9-1=Nearly Perfect

selected barangays of Indanan, Sulu.

Table 4 presents the correlations between the sub-categories encompassed within the extent of the ZODP across selected barangays in Indanan, Sulu. More precisely, it outlines the

strength and direction of the relationships among these sub-categories, as observed in the studied barangays of Indanan, Sulu. The findings indicate the following degrees of correlation:

1. High positive correlation between Awareness of the Zero Open Defecation Program and Implementation of the Zero Open Defecation Practices.
2. High positive correlation between Awareness of the Zero Open Defecation Program and Health and Environmental impact; and
3. High positive correlation between Awareness of the Zero Open Defecation Program and Community Feedback and Suggestion.

The findings suggest that the respondents who rated the extent of the ZODP in selected barangays of Indanan, Sulu, as "Agree" or "High" in terms of Awareness of the Program are likely the same group that also assessed the program favorably in terms of Implementation of ZOD Practices, Health and Environmental Impact, and Community Feedback and Suggestions.

At present, it can be reasonably concluded that the sub-categories under the ZOD Program in the selected barangays of Indanan, Sulu, exhibit a high degree of correlation. Consequently, the null hypothesis stating that "There is no significant correlation among the sub-categories subsumed under the Zero Open Defecation Program in selected barangays of Indanan, Sulu," is rejected.

Conclusion

This study concludes that respondents are proportionally represented in key demographic factors such as age, gender, educational achievement, and average monthly income. The ZODP implementation level is scored as "agree," indicating moderate awareness, with scores uniformly moderate across all subcategories. This suggests that the program's efficacy and outcomes are widely regarded as positive. Notably, the health and environmental impact category received the highest mean score, emphasizing the program's perceived advantages to public health and ecological sustainability. When data were stratified by age and educational achievement, there was a significant difference in the level of ZODP implementation, but no significant variation was discovered when data were grouped by gender or average monthly income. Furthermore, the study finds a strong intercorrelation among the subcategories assessing implementation extent, implying that the program's components are interconnected and have a mutual influence on one another.

Based on the aforementioned findings and conclusions, this study proposes the following recommendations: First, the Department of Health may utilize the results of this study to conduct regular training programs for health workers and local officials on sustainable sanitation practices and community engagement strategies. Second, Municipal Health Officers may adopt the results of this study in understanding the effectiveness and impact, particularly in health and environment, and be able to allocate resources accordingly. They can also use the data to evaluate the success of the ongoing program and identify areas for improvement. Third, Public Health Nurses may utilize the findings of this study in community health education, patient advocacy, and program implementation, strengthening community health information drives to address possible misconceptions or barriers to participation. Fourth, Barangay Health Workers may utilize the findings of this study to engage more actively with the community through door-to-door campaigns, community meetings, and school programs to educate on the importance of ZOD. Fifth, student researchers in the field of healthcare services are enthused to further explore the topic; they can explore the reasons behind the observed differences based on age and educational levels, investigate the programs' long-term impact, or replicate the study in different settings. Finally, for future research studies, interested researchers may explore the factors contributing to differences in ZODP implementation.

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