

ASSESSING THE KNOWLEDGE ABOUT WASTE MANAGEMENT IN NABARI PAYAM SOUTH SUDAN. A CROSS-SECTIONAL STUDY.

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Abstract

Background

In Uganda, management of waste within Team City is a challenge as reflected by 20.0 percent of total waste can only be collected and disposed of in Team City center and city divisions. The purpose of the study is to assess the knowledge about waste management in Nabari-Payam South Sudan.

Methodology

A cross-sectional survey, descriptive and explanatory design where quantitative and qualitative methods were adopted. A questionnaire and Focus group discussion were adopted and interviews for Key Informants. Data was analyzed descriptively using the Statistical Package for Social Sciences and thematic methods for quantitative and qualitative data.

Results

207 (62.0%) disagreed about being trained on waste management, concerning knowledge about color coding segregation for waste, 267 (79.9%) of the respondents disagreed, About labeling the containers before filling them with waste, 146 (49.1%) agreed, the mean score was 3.40 and standard deviation 1.12 denoting that most of the respondents agreed about labeling containers before filling them with waste Concerning segregation of waste. Regarding the use of personal protective gear when handling waste, 104 (31.1%) strongly disagreed, the variable mean score and standard deviation were 2.31 and 1.15 respectively noting that there was disagreement on matters of use of protective gear.

Conclusion

Knowledge regarding waste management for residents of Nabari Payam was low due to the absence of training on matters of waste and its management from the local authorities.

Recommendations

Payam residents in Nabari Payam and the line ministries of the Republic of South Sudan should increase their budget allocations for waste management to train residents and managers at all levels and acquire adequate knowledge on waste collection, segregation, storage, transportation, and disposal tools.

Keywords: Knowledge about waste management, Color coding segregation for waste, Nabari-Payam South Sudan.

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Background

Poor management of waste is attributed to the lack of a risk assessment framework for waste or waste which increases uncertainties and lack of control for the management of waste resources and activities in a city setting that affect the eco-system in countries like China (Xueguo, Tingting & Meizeng, 2020). In countries like Malaysia, waste generation is more than 25,000 tons of household waste per day as urbanization and the population increase rapidly (Cheng et al, 2022). The increasing amount of unmanaged household waste that consists of kitchen, organics, and inorganic components that emit greenhouse gases (Boldrin

et al, 2009). In Thailand, poor waste management and practices are due to the increasing population, rapid development, and urbanization. So, the provision of suitable waste management involving health problems is a challenging task in several communities (Laor et al, 2018). In Uganda, management of waste within Team City is a challenge as reflected by 20.0 percent of total waste can only be collected and disposed of, and in Team City center and city divisions, there is poor management of waste with a collection frequency of per week and twice for markets and residential places respectively characterized with landfill and open dumping places (Nyakaana, 2016). Team Capital

City Authority (KCCA) with business partners charges a fee for waste collection from city residents however, many households forfeit waste collection and management services as a result of unaffordability, inaccessibility to vehicles that collect waste ignorance for management of waste services, and efficiency of waste collecting companies (Mukama, Ndejjo, Musoke, et al, 2016).

Knowledge concerning waste management is described as the facts, information, and skills acquired through experience or training (Vishnu et al, 2021). The best knowledge acquisition on waste management is likely to enhance the best practices for the management of waste and indeed, the attitude towards waste and related practices might improve with the increased knowledge acquisition over the same subject matter (Ebekozi et al, 2022). In the management of waste, knowledge is power and a critical factor that would lead to the best practice of the required waste management in places (Richter, Ng, Karimi, & Chang, 2021). Poor knowledge among local people concerning waste management is the root cause of poor waste management in communities and there is a need to ensure that there is adequate knowledge for waste management in societies and this should be spearheaded by the local authorities (Ahamed et al, 2021). Studies among residents in some communities of Kenya have been found to have good knowledge but poor attitude towards solid waste management, recommending that the County Government should organize regular clean-up exercises involving the residents as well as enforcing existing waste management rules and regulations (Muiruri, Wahome and Karatu, 2020). Municipal and city places need to make sure that the residents are given the best information on the management of waste and then receive feedback on how best to implement such information. The purpose of the study is to assess the knowledge about waste management in Nabari-Payam South Sudan.

Methodology

Research Design

The study adopted a cross-sectional survey, descriptive and explanatory design for accurate estimation of the relationship between the variables. The cross-sectional design provided a snapshot of a sample of a population at a single point in time. The study also used a quantitative approach and analytical research design on the data that was collected.

Study Area and Population

Juba city has Muniki Payam, Kator Payam, Rajaf Payam and Juba Nabari payam system. The administrative demarcations of Juba City are based on the following divisions: Muniki Payam, Juba Nabari Payam, Kator Payam, and Rajaf Payam. The city and Nabari Payam have

a prevailing disparity of densities of population and incomes. Those who are generally most affluent are those people living in the suburbs of the West, sharply contrasting with their counterparts who live in the eastern suburbs that are in the lower and middle-income levels. Wetland Sub-county borders the low-income areas of Konyo Konyo. The constituency has an area of 72.4 km². It contains some of the highest-income areas in Juba City, as well as low-income areas like Juba Nabari, and Deep River Nile wetland.

Deplorable living conditions and environmental degradation are characteristic lifestyle experiences of those living in low-income settlements. The brunt of it all is their diminished low level of participation in the social, economic, cultural, and political spheres of the city. The most painful of the incidental consequences of these exclusions is the worsening of poverty among the poor. Westland Sub-county has 88 students with 4,166 in public schools and 3,022 in private schools.

Sample Size

A sample size of 384 respondents were involved in this study. Key Informants (KIs) were; the Juba City-Environment Officer, City Authority Waste Management Officer, and City Private Company-Based Waste Management staff in charge of waste management.

Formula by Leslie Kish (1965) was used for estimation of sample size:

Where

n = sample size

z = the standard normal deviation at 95% confidence (1.96)

p = 50% of the estimated proportion of Juba City-Nabari Payam residents.

$q = (1-p) = (1-0.5) = 0.5$

= maximum acceptable error (5%)

Therefore, sample size $n =$

Sample size $n = 384$ Respondents

Sampling Techniques

Purposive sampling was used to select 3 key informants (KI) for the study that is; the Juba City-Environment Officer, City Authority Waste Management Officer, and City Private Company-Based Waste Management staff. Simple random sampling was also opted for to select respondents (Residents of Nabari Payam). This was because it would give an equal chance to be selected and thus, prevent the researcher from bias at the time of respondents' selection.

Data Collection Methods

The questionnaire, interview, and focus group discussion methods were used for data collection as indicated below.

Questionnaire

Quantitative data was obtained through the use of a questionnaire anchored on a five-point Likert-type scale ranging from 5 (strongly agree) to 1 (strongly disagree). This scale was selected to allow the respondents to express how much they agree or disagree with the statements in the questionnaire. This instrument was applied among the Nabari Payam Residents in the urban and semi-urban of the area. The design of the questionnaire guide was based on the objectives and variables of the study. A total of 334 residents of Nabari Payam were engaged in quantitative data collection using a questionnaire guide.

Interview

A structured interview was designed based on the objectives of this study and it was administered among the three (3) key informants. The interview method was designed to last for 4-1 hours to elicit information regarding waste management practices, knowledge, practices, and attitudes as stated by the study objectives. This method was applied physically using an interview guide with the study participants and the researcher moderated the data collection exercise.

Focus Group Discussion

The researcher carried out five (5) focus group discussions in zones of Nabari Payam with a total of 50 participants. The FGD method was accompanied by an FGD guide that contained questions regarding knowledge, practices, and attitudes about waste management in Nabari Payam.

Validity and Reliability of the Research Instrument

The validity of the instrument was obtained through the development of the scales with the help of the experts in the field using the Content Validity Index (CVI). The reliability of the tools was enhanced through pre-testing of pilot samples in a simulated environment from the field which enabled the re-phrasing of some questions if they did not pass the test.

The pretesting of the questionnaire is instrumental and vital to ensure it is not faultless and understandable by the respondents. The discussion with two random respondents helped to prove the validity and relevance of the questionnaire. The respondents who participated in the reliability test were not included in the study.

The reliability of the items was determined with the application of the Cronbach Coefficient Alpha to check for internal consistency. Items that confirmed a Cronbach Alpha Coefficient of 0.7. The instruments were pretested in Kator Payam among residents. For qualitative data collection instruments, dependability, conformability, and

credibility principles were considered and applied to the interview and focus group discussion guide.

Data Analysis and Interpretation

Data collected from the field was tabulated, sorted, edited, classified, and coded into a coding sheet. The cleaned data was summarized and converted into frequencies and percentages using the category system. The researcher then used Statistical Package for Social Scientists (SPSS-23) to analyze the data collected.

Under descriptive analysis, variables were measured using frequency, mean score, and standard deviation. In addition, a scale of below, equal, and above three (<, = and >3) to show the degree for the mean scores where a mean of three represented a neutral, (Neither Agree Nor Disagree) less than three (<3) disagree and above three (>3) agree on a given variable item. Analyzed data was presented using frequency distribution tables.

For objective two knowledge about waste management was measured in terms of high or suboptimal (poor) among the respondents regarding waste management. The objective about attitude was considered in terms of holding a negative or positive attitude among the study respondents regarding waste management.

Qualitative data was analyzed by use of the thematic analysis method. This allowed the information to be presented with themes and elaborated as provided by the respondents. This type of data was triangulated with quantitative data to provide a clear presentation of information for this study.

Ethical Considerations

The researcher acquired an introduction letter from the University together with the identity card presented to Juba City Authority and Nabari Payam leaders and other categories of respondents before data collection. Further, this research project and the dissertation went through the guidance of the supervisor until its submission to the university.

Assurance was made to management and staff that the information collected was for academic purposes. Thus, there were no other purposes that this study served except providing information regarding knowledge, attitude, practices, and management of waste at Nabari Payam and informing stakeholders about key areas for improvement.

The assent issue was resolved by obtaining informed consent informing target respondents of the purpose of the study, the expected participation from them, and any other information about the research that they wanted to know. The respondents signed the consent form before engaging in the data collection exercise.

Confidentiality of the respondents was paramount except in the case where they were permitted to be cited in the study.

To achieve this, respondents were not presented by their names or job titles in chapter four but rather they were referred to as KRI, KR2, and KR3, Residents of Nabri Payam in the FGI s were referred to as female participant group one or male participant (MP 1 -G-One or FIJ I or FP3-G-3) according to the group in a given place of Nabari Payam.

The privacy of the respondents was considered at the time of data collection by ensuring that data collection was carried out in a private manner where the respondents' offices or private places were utilized to achieve this. However, except in the focus group discussion, this

principle was not observed but the respondents were notified of the matter.

Results

The qualitative information is from 334 respondents, qualitative from 50 participants from five focus group discussions, and 3 key informants.

Background Information of Respondents

Age, gender, occupation, marital status, education, and time spent in the Nabari Payam were considered for the descriptive results of this study.

Table 1: Distribution of Respondents by Demographic Information

Overall N = 334			
Characteristic	Variable categories	Frequency	Percentage
Gender	Male	137	41.0
	Female	197	59.0
Age	18-25 Years	60	18.0
	26-35 Years	149	
	36-45 Years	69	20.7
	46 Years and above	56	16.8
Marital Status	Single	14	4.2
	Married	255	76.3
	Divorced/Separated	56	16.8
	Widowed	9	2.7
Level of Education	Primary	5	1.5
	Secondary	64	19.2
	Tertiary	136	40.7
	University	129	38.6
Occupation	Business	70	21.0
	Causal Labor	145	43.4
	Health/Medical Worker	65	19.5
	Transport (Motorlist)	54	16.2
Time Spent in the Payam	< 5 years	29	8.7
	> 5 years	305	91.3

Source: Primary Data (2022)

Table 1 provides descriptive findings where 197 (59.0%) and 137 (41.0%) were male and female respondents respectively. In terms of age 149 (44.6%) of the respondents were aged 26-35 years, 69 (20.7%) had 36-45 years, 60

(18.0%) of the respondents had 18-25 years, and 56 (16.8%) with 46 years.

In terms of marital status, 255 (76.3%) of the respondents were married, 56 (16.8%) separated and 14 (4.2%) were single. With education, 136 (40.7%) of the respondents had

a tertiary level of education, 129 (38.6%) with university degree, 64 (19.2%) secondary level and primary were Findings regarding occupation, majority of the respondents were in casual labor economic activities 145 (43.4%), 70 (21.0%) were in business, health/medical workers were 65 (19.5%) and motorists were 54(16.2%). For time spent in the Payam majority of the respondents 305

(91.3%) had stayed in Nabari for > 5 years.

Knowledge about Waste Management in Nabari Payam

Table 2: Distribution of Respondents Regarding Knowledge of Waste Management

Overall N 334							
Variable Items	SD	D	N	A	SA	Mean	Std.
I have ever been trained to manage waste	115(34.4%)	207(62.0%)	6(1.8%)	3(0.9%)	3(0.9%)	1.71	0.63
I know about color-coding segregation of waste	50(15.0%)	267(79.9%)	8(2.4%)	3(0.9%)	6(1.8%)	1.94	0.60
I always follow color coding for waste management	14 (4.2%)	279(83.5%)	24(7.2%)	8(2.4%)	9(2.7%)	2.15	0.65
I am aware of the hazard color symbols	66(9.8%)	224(67.10/0)	36(0.8%)	3(0.9%)	5(1.5%)	1.97	0.69
Labeling the container before filling it with waste is of significance	24(7.2%)	60 (18.4%)	46(13.8%)	146(49.1%)	40(12.0%)	3.40	1.12
I segregate waste generated at my household before disposing of it	66(19.8%)	210(62.9%)	42(12.6%)	10(3.0%)	6(1.8%)	2.04	0.77
I use personal protective gear/measures when handling waste	104(31.1%)	79(29.0%)	63(18.9%)	64(19.2%)	6(0.8%)	2.31	1.15
I can identify methods of waste management	25(7.5%)	256 (76.6%)	29(8.7%)	12 (3.6%)	12(3.6%)	2.19	0.77
Waste can transmit diseases to human beings	6(1.8%)	8(2.4%)	31 (9.3%)	255(76.3%)	34(10.2%)	2.49	1.04
Average Mean Score						2.44	0.82

Source: Primary Data (2022)

Table 2: 115 (34.4%) and 207 (62.0%) of the respondents strongly disagreed and disagreed respectively about being trained in waste management, and 3(0.9%) of the respondents the same percentage strongly agreed. A total of 6 (1.8%) of the respondents neither agreed nor disagreed. The mean score and standard deviation were 1.71 and 0.63 respectively. This implies that the majority of the respondents had not received any training on waste management in Nabari Payam.

Findings for knowledge about color coding segregation for waste indicated that 267 (79.9%) and 50 (15.0%) of the respondents disagreed and strongly disagreed, 8 (2.4%) of the respondents were undecided, and 3 (0.9%) strongly agreed and agreed respectively. The variable item mean score and standard deviation were 1.94 and 0.60 respectively. This is an indication that there was disagreement among the respondents over this item.

Findings also indicate that regarding the following color coding, 279 (83.5%) and 14 (4.2%) of the respondents disagreed and strongly disagreed respectively. 24 (7.2%) were undecided, 8 (2.4%) and 9 (2.7%) of the respondents agreed and strongly agreed respectively. The variable item mean score was 2.15 and the standard deviation was 0.65. This finding offers an implication that there was disagreement among the majority of respondents on following color coding regarding waste management.

In terms of awareness of hazard color, findings showed that 224 (67.1%) and 66 (19.8%) of the respondents disagreed and strongly disagreed about the variable item. It was indicated that 36 (10.8%) of the respondents were undecided, 3 (0.9%) and 5 (1.5%) of the respondents agreed and strongly agreed respectively. The variable standard deviation and mean scores were 0.69 and 1.97 respectively. For labeling the containers before filling them with waste, findings indicated that 146 (49.1%) agreed that they were able to do so, 40 (12.0%) of the respondents strongly agreed, 46 (13.85) were undecided, 24 (7.2%) and 60 (18.4%) of the respondents strongly disagreed and disagreed respectively. The mean score was 3.40 and the standard deviation was 1.12. The findings denote that most of the respondents agreed about labeling containers before filling them with waste.

Regarding segregation of waste, 210 (62.9%) and 66 (19.8%) of the respondents strongly disagreed and disagreed respectively, 42 (12.6%) were undecided, 10 (3.0%) and 6 (1.8%) of respondents agreed, and strongly agreed respectively. The mean score was 2.04 and the standard deviation was 0.77. The information provided symbolizes that there was agreement among most respondents regarding waste segregation at the household level.

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Findings for the use of personal protective gear when handling waste show that 104 (31.1%) and 97 (29.0%) of the respondents strongly disagreed and disagreed respectively, 63 (18.9%) of the

respondents were undecided, 64 (19.2%) and 6 (1.8%) of the respondents agreed and strongly agreed respectively. The variable mean score and standard deviation were 2.31 and 1.15 respectively. It is, therefore, noted that there was disagreement of majority respondents on matters of use of protective gear for matters of waste handling.

The identification of waste management methods is vital and for this study, it was found that 256 (76.6%) of the

respondents disagreed and 25(7.5%) strongly disagreed. It was also found that 12 (3.6%) of the respondents agreed and the same percentage strongly agreed with the variable item. Only 29 (8.7%) of the respondents were undecided. This is an indication that there was disagreement among the respondents regarding knowledge about methods of waste management.

Findings for knowledge about disease outbreaks by waste to humans indicated that 255 (76.3%) and 34 (10.2%) of the respondents agreed and strongly agreed that they could get diseases due to poor waste management in Nabari Payam. It was found that 6 (1.8%) and 8 (2.4%) of the respondents strongly disagreed and disagreed respectively with the means score and standard deviation being 2.49 and 1.04 respectively. The information derived from this item points out that respondents were aware and had knowledge about disease outbreaks and transitions due to poor waste management.

The entire items for this objective had a mean and standard score of 2.44 and 0.82 respectively. This denotes that there was disagreement among most respondents for the study items that answered this objective.

Based on the discussions held with participant-local residents, it was revealed that most providers never knew the proper meaning of waste, and different definitions were obtained. One of the participants revealed;

"I don't know but I think, it may mean all wastes that are produced in the Payam when we are dressing wounds, giving medicines in the form of injections, and so forth " (Interview with KRI)

Most of the Payam residents were also not knowledgeable about the disposal of waste. One key informant who claimed that Payam residents knew defined it thus;

"A way how the wastes produced by the Payam are destroyed safely without posing risk to the persons handling it, the population within the area where the waste is being burned or buried and without causing harm to the surroundings " (FGD with one the Participants-MPI-G4).

Most facilities had not trained residents on waste management as one key informant revealed:

"Here there is no training for waste so there is a need to train the Payam residents, and the cleaners on the risk of medical waste we generate. We need to have special containers and dresses for handling medical wastes to prevent us from the risks of getting diseases like HIV" (FGD with one of the Participants-MP8-G1).

Further information obtained from participants revealed that staff had not been trained in issues related to waste and its management and this was putting their lives at risk of getting infections and diseases from the Payam residents and the surrounding environment.

"There is a need to train the Payam authorities, the Payam residents, and support staff such as the cleaners on the risk associated with wastes produced here. There is a need to

have special containers and dresses for handling waste to prevent us from the risks of acquiring diseases like hepatitis B and HIV (FGD) with one of the Participants-MP2-G5).

On a positive note though, some organisations had tried to train some Payam residents on waste management and this created awareness amongst these staff on the dangers of improper waste handling. One FGD participant revealed;

"I had to learn about waste courtesy of the International Committee of Red Cross (ICRC). We were told that these are wastes produced by different units including where I am working in this hospital. For example, when I conduct a vaginal examination and

"I don't know but I think, it may mean all wastes that are produced in the Payam when we are dressing wounds, giving medicines in the form of injections, and so forth " (Interview with KRI).

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"There is a need to train the Payam authorities, the Payam residents, and support staff such as the cleaners on the risk associated with wastes produced here. There is a need to have special containers and dresses for handling waste to prevent us from the risks of acquiring diseases like hepatitis B and HIV" (FGD with one of the Participants-MP2-G5).

On a positive note though, some organisations had tried to train some Payam residents on waste management and this created awareness amongst these staff on the dangers of improper waste handling. One FGD participant revealed;

"I had to learn about waste courtesy of the International Committee of Red Cross (ICRC). We were told that these are wastes produced by different units including where I am working in this hospital. For example, when I conduct vaginal examinations and deliveries, I use gloves, swabs. Sometimes I use an intravenous set for giving drips, so the used needles, cannulas, and the drip set all become wastes.

They contain body fluids which may have diseases like HIV; as such they need special handling and disposal as far as I have been told" (FGD with one of the Participants-MP6-G4).

The views on who to train were varied and some FGI) participants were of the view that the training should not only be for Payam residents but also the rest of the community members who should also be accompanied by regular refresher courses being carried out.

. Extensive awareness to the Payam residents and the community on what wastes are should be given a priority; the Payam residents and the support staff need to be trained and have regular refresher training [to keep (them abreast with waste management " (FGD with one the Participants-MP5-G5).

It was however, found that one of the female participants revealed that due to the assistance of ICRC, some residents, staff for health, and other institutions had been oriented on waste handling and collection. Some staff would use separate containers to collect waste.

"With collection and sorting, to some extent, staff can do this, because ICRC has given orientation to every one of us working in this hospital on how to handle wastes. For example, in this hospital, they are collecting waste in four different containers of different colors. (FGD with one of the Participants-FP4-G2).

It was also revealed that protective gear like gloves are used by medical and non-medical staff in handling waste. However, it was revealed that these are minimal as most of the time they experience stockouts due to financial constraints.

As a nurse by profession, I use gloves when examining pregnant women, handling abortions, delivering women in labor, and cleaning newborns but we don't have special dresses like overall wear, face masks, pairs of gumboots, and head caps for the workers" ((FGD with one the Participants-MP3-G1).

With the above findings, it is also vital to note that the ability to describe waste management signposts is also key as far as knowledge of waste management practices is concerned.

Discussion

Knowledge about Waste Management in Nabari Payam

Descriptive quantitative findings revealed that the entire items for this, objective had a mean and standard score denoted that there was disagreement among most respondents for the study items that answered this objective. This could be attributed to several factors including the level of training, the political - will, and financial and human resources to address issues of waste management among the people of Nabari Payam. The findings show that residents of Nabari Payam had a sub-optimal level of knowledge

regarding waste management. The effort made by city authorities to make residents aware of the issues regarding waste. This information is about literature by Laor et al (2018) who stated that in a community, good knowledge of waste management enhances good practices for its management in society. It is, therefore, argued that improved knowledge of waste management is the best requirement for its enhanced and improved management by members of the community at household, organizational, and health facility levels.

Based -on the findings of this study, it is further argued that the level of knowledge for household members, NGO staff, and health care workers on proper waste types handling is vital as it promotes adherence to the guidelines with clear steps including collection, segregation, storage, treatment, transportation and final disposal of waste. Inconsistent use of protective gear places the lives of healthcare providers per se, and the general public to get infected with biomedical waste-related diseases as well as contaminating their surroundings.

This argument and the qualitative findings presented in the previous chapter are in agreement with the literature by Kwagala (2016) who argued that good knowledge of waste management makes people in the community acquire more awareness and acceptance of the different types of diseases spread and types of hazardous waste. The effects and impacts of such diseases can be well known by the members of the community and this can help to come up with preventive measures on the society and individual community members.

The findings that most of the study participants had not been trained in matters of waste management, however, are linked to the insurgencies that have been characterizing the country South Sudan. But in the bid to increase knowledge of waste management, it is vital to have the best training for local people on how waste should be managed. This finding, however, does support the literature by Kumar et al (2013) who emphasized that training of the local populations is required in communities. The same researchers added that this training needs to cater to the different types of waste generated in a given community. Therefore, the limited training of people in Nabari Payam is a limiting factor to the efforts of increasing knowledge and awareness regarding waste as provided by Kumar et al (2013).

The disagreement among this study's respondents regarding color coding and segregation is a sign that there was limited training of residents in Nabari Payam and this is an indication that there would be no good practices for the management of waste in the Payam. This is in disagreement with the literature provided by Chen (2020) who emphasized that in a community good waste knowledge management entails good segregation of waste and dumping it in the assigned containers that would ease disposal and other activities including recycling.

About knowledge and awareness of the degree of hazard from the waste, it was found that most of the study participants could not distinguish the signs of waste that reflect the degree of dangers possessed. This finding is also supported by the qualitative information that was obtained through interviews and FGDs. This is however, in disagreement with literature by Thakur, Parida, and Raj (2022) who stated that in a community or city, the aspects of poor management of waste is a threat to the environment and the eco-system and therefore, it is important to have regulations regarding how people behave towards such hazards waste in the communities. Therefore, the poor management is due to poor knowledge among the residents of the Nabari Payam. It is, therefore, stated that poor knowledge among local people regarding waste management is the factor that determines the level of good waste management in Nabari Payam.

The findings also indicated that respondents could not identify methods of waste management and this is a reflection that there would be no waste management at the household and community level. This finding is still linked to knowledge and training. However, it is argued that literature by Alam and Ahmade (2013) stated that in the community, good waste management goes with abilities to identify methods of waste management by the residents of the community. It is also stated that more environmental topics can be initiated in the Payam to increase knowledge levels among the residents. Globally, countries are suffering global warming so this is the right time to save South Sudan.

Conclusion

Knowledge regarding waste management for residents of Nabari Payam was low. This was due to the absence of training on matters of waste and its management from the local authorities. Color coding, segregation, and labeling would not be applied by the local people in the Payam.

Limitations of the Study

In focus on practices, and attitudes the adoption of a quantitative data collection method (Questionnaire) was inadequate for understanding respondents' emotions, behavior, and feelings about waste management and how each category of stakeholders fulfills their roles and responsibilities, this was partly filled up by focus group discussion and interview data.

The use of a cross-sectional research design did not provide data reflecting the cause relationship between the study variables. This would lead to bias in the study outcomes.

However, the researcher remained objective with the findings of the study.

The study was affected by non-response from some of the respondents under study. They were viewed from the required information as confidential. The researcher,

however, had a reference letter from the university to confirm that the information was to be handled with confidentiality.

In some instances, where the required respondents were on duty and busy, it was hard to get the information needed from their key informants and this caused delays since the researcher may have to wait until they came back on duty.

Some respondents became suspicious about data required from them for fear of their security about waste management in their respective offices and households. It is however noted that there was a clear explanation was provided emphasizing how the research is strictly for academic purposes.

Recommendations

The Payam administrators in the Nabari Payam authority department and the rest of the counties in the Republic of South Sudan with support from the Ministry of Environment and other ministries such as that for health and organizations providing waste management services should embark on a continuous cascade intensive training to the Payam residents on the right definition, the different types and the risks associated with wastes, and the benefits of proper waste management to the wellbeing of Payam residents, the general public and their surroundings.

Similarly, to increase the level of awareness among the population, sustainable promotion and sensitization meetings should be conducted with the general public on the importance of proper waste management.

Payam residents in Nabari Payam and the line ministries of the Republic of South Sudan should increase their budget allocations for waste management to train residents and managers at all levels and acquire adequate knowledge on waste collection, segregation, storage, transportation, and disposal tools.

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List of abbreviations

CVI: Content Validity Index
JCC: Juba City Council
KCCA: Kampala Capital City Authority
KI: Key Informant
Kr: Key Respondent
MPI-G: Male Participant- Group One
NGOs: Non-Governmental Organizations
SPSS: Statistical Package for Social Sciences

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Conflict of interest

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Author Biography

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