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The influence of community participation in problem identification on the sustainability of malaria projects in Juba City, South Sudan. A cross-sectional study.

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Abstract

Background

Community participation in identifying health problems is a foundational principle for sustainable community health projects. This study examines the effect of problem identification on the sustainability of the Local Malaria Project (LMP) in Juba City, South Sudan.

Methods

A descriptive cross-sectional design was employed, using a quantitative method approach. The study involved 291 respondents, including household heads, selected via simple random sampling. Data were collected through questionnaires, focus group discussions (FGDs), and key informant interviews. Quantitative data were analyzed using Pearson correlation and regression.

Results

The respondents were relatively literate, with 61% having attained at least secondary education. The primary occupation was peasant farming (36.1%). While the needs assessment was effectively guided by the County Health Department (CHD) and malaria was prioritized as the top health concern (74% agreement), direct community participation in consultation meetings was low (mean scores 2.2-2.8). A significant, moderate positive correlation was found between problem identification and sustainability ($r = 0.423$, $p < 0.05$). Regression analysis showed that problem identification accounted for 17.8% of the variance in project sustainability.

Conclusion

The process of problem identification was more externally facilitated than community-led, resulting in a weak foundation for local ownership and limiting its contribution to long-term sustainability.

Recommendations

Implement more inclusive, community-led consultation processes from the outset to build genuine ownership and strengthen the sustainability of health interventions.

***Keywords**: Community Participation, Problem Identification, Sustainability, Malaria Control, South Sudan.*
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Introduction

A critical stage in this participatory process is problem identification, where communities are involved in defining their health priorities and finding solutions to these problems (Nilsen, 2006). The underlying assumption of this principle is that it represents a bottom-up approach, empowering people to acquire skills to assess their needs, set priorities, and control their environment, thereby fostering a sense of identification and ongoing responsibility for the project (Howard-Grabman & Snetro, 2002). The World Health Organization (WHO, 1991) posits that engaging local communities to identify their own health priorities spurs the development of innovatory, culturally acceptable solutions with locally available resources.

However, the reality often diverges from this ideal. Scholars like Arnstein (1969) and Susan et al. (1990) caution that involving people in consultations without granting them decision-making power can be a mere "window-dressing ritual," where participation remains tokenistic. In the context of South Sudan, this is exacerbated by a history of top-down programme implementation that failed to build community capacity, leaving communities as passive recipients of services (Intra-Health International Annual Report, 2024). This approach has rendered the sustainability of health projects unrealistic, as they are not owned by the very communities they are designed to serve. For malaria control specifically, the Ministry of Health (2016) reported that 57.5% of respondents cited a lack of community

involvement in programming as a reason for not using insecticide-treated nets. This study, therefore, seeks to critically investigate the nexus between community participation in the initial stage of problem identification and the potential for sustainability of the Local Malaria Project in Juba City. This study was to examine the relationship between problem identification and the sustainability of the Local Malaria Project (LMP) in Juba City.

Methodology

Research Design

The study used a descriptive cross-sectional research design to examine the relationship between community participation and the sustainability of community health projects. This design was chosen to enable an in-depth study of the single phenomenon of the Local Malaria Project Support (LMPS), from which insights could be obtained to inform understanding of broader cases. Quantitative approach was employed for the triangulation of data collection methods. This ensured that the data captured through the questionnaire were complemented and enriched by the qualitative data collected through other instruments used in the study.

Study Setting and Population

The study population consisted of households and stakeholders who were directly involved in or benefited from the Local Malaria Project (LMP) interventions in Juba City. Specifically, it included a total population of 1,224 individuals, comprising 1,200 household heads from beneficiary communities in Juba City that had been receiving services from the LMP. In addition, 20 members of the Malaria Task Force or Committee at the Ministry of Health (MoH) who were actively engaged in malaria prevention, awareness, and control activities within Juba City were included. Furthermore, four key informants, two from the State Ministry of Health in Central Equatoria State and two from the County Health Department in Juba County, were selected, as they were the primary officials responsible for intervention supervision and oversight. The study covered the period from 2014 to 2018.

Sample Size Determination and Selection

To determine the sample size for the household survey, the study referred to the Krejcie and Morgan (1970) table for sample size determination. A population of 1,224 individuals comprising household members, malaria committee members, and key informants from the state and county levels, a sample size of 291 individuals was recommended at a 95% confidence level with a 5% margin of error. This sample size was considered sufficient to provide a representative estimate of household participation, knowledge, and involvement in malaria intervention activities.

Sampling Techniques and Procedure

Simple Random Sampling: Each household had an equal chance of being selected. A sampling frame was constructed using the project's beneficiary household list in Juba City. Using the sample size of 291 households (as determined by the Krejcie and Morgan table), households were randomly selected through a random number generator or lottery method. This approach ensured that the selected households represented the broader community and minimized sampling bias.

Non-Probability Sampling (Key Informants / Task Force Members): For selecting members of the Fight Malaria Task Force (20 members) and four key informants drawn from the State Ministry of Health and the County Health Department in Juba City, purposive sampling was employed. All task force members were included because of their key roles in malaria prevention, planning, and project implementation. This approach ensured that the study captured insights from individuals who had specialized knowledge and were directly involved in the project.

Sampling Procedure

A list of all 1,224 beneficiary households was obtained from LMP project records. Each household was assigned a unique number, and a random selection method was used to choose 291 households for the survey. All 20 task force members were identified and recruited using purposive sampling. Ethical considerations were observed, including obtaining informed consent and maintaining confidentiality for all participants.

Data collection Methods and instruments

Questionnaire

A questionnaire data collection method was used to collect quantitative data. The questionnaire was administered to the respondents, given that the literacy levels of the people in Juba City were relatively low. This involved reading the questions to the respondents and marking the questionnaires according to the responses provided by them. A structured questionnaire was employed to collect information from the subjects of the study.

Focus Group Discussion

Focus Group Discussions were conducted using a focus group discussion guide, which contained a list of open-ended questions related to community participation in need identification as well as how these activities contributed to the sustainability of the Local Malaria Project Support (LMPS). The respondents were selected based on the knowledge and expertise they possessed in relation to the

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study concepts and variables. The study facilitated the discussions with two Fight Malaria Committees from the selected villages. The rationale behind this approach was to obtain the groups' opinions on whether community participation contributed to the sustainability of the Local Anti-Malaria Programme Support project in Bungokh.

Key Informant Interviews

Face-to-face interviews were conducted between the researcher and selected key informants from the Juba City Health Office, Juba Sub-County Office, South Sudan County Health Department, and relevant Ministry offices. The in-depth information required from the informants was obtained through the use of an interview guide, which contained open-ended questions that enabled the researcher to gather detailed and comprehensive information from the respondents.

Documentary Review

A review of documents was carried out using a documentary analysis checklist. A list of documents to be reviewed was prepared to guide the search for the necessary information for the study. The documents included monthly activity reports from villages to the LMPS office, village record books, constitutions, local contribution record books, village work plans, monitoring reports, signed Memoranda of Understanding, and bank records for the villages' accounts. These records helped to confirm and validate the data that were gathered through other research instruments.

Observation

Direct observation was used to assess some of the activities carried out by the beneficiaries, such as hanging mosquito nets, clearing drainage channels, and maintaining the cleanliness of homestead surroundings. This served as a confirmatory test of behavior change practices among community members. An observation checklist was used, containing variables that were observed, such as properly tied nets, drained community swamps, and cleared households free from broken pots, tins, holes, and bushes.

Validity and Reliability

The study's research instruments were subjected to expert judgment, which was conducted by the supervisor. The supervisor evaluated the relevance of each item in the instrument in relation to the study objectives in order to establish its validity. The questions were rated on a four-point scale, where 4 represented "very relevant," 3 "quite relevant," 2 "somewhat relevant, and 1 "not relevant." The Content Validity Index (CVI) was calculated by dividing the number of items rated as relevant by the total number of questions.

Similarly, a Cronbach's Alpha coefficient for internal consistency of the items in the questionnaire was established using the SPSS reliability test. This procedure ensured that the instrument was both valid and reliable for data collection.

Data Analysis

Pearson correlation coefficient was used to determine the strength of the relationship and the degree of variability in the dependent variable. Descriptive statistics such as percentages, means, and standard deviations were used to analyze the quantitative data collected through the questionnaire. Tabular and graphical presentations of the data were prepared to summarize the results and facilitate easy interpretation and discussion.

Results

Socio-Demographic Characteristics of Respondents

The study sought to understand the demographic profile of participants to assess how various factors, such as education and occupation, influence community participation in malaria prevention and control initiatives.

Education status of respondents

Table 1: Education Level

Education Level	Frequency (f)	Percentage (%)
Primary	85	29.20%
Senior 4	92	31.60%
Diploma Level	60	20.60%
Bachelors Degree	40	13.70%
Others (Specify)	14	4.80%
Total	**291**	**100%**

Education Level

Findings from the study revealed that the majority of respondents (61%) had attained at least a secondary level of education or higher. This suggests that a significant portion of the community possesses basic literacy and comprehension skills, which are essential for understanding and engaging in malaria prevention programs. The relatively

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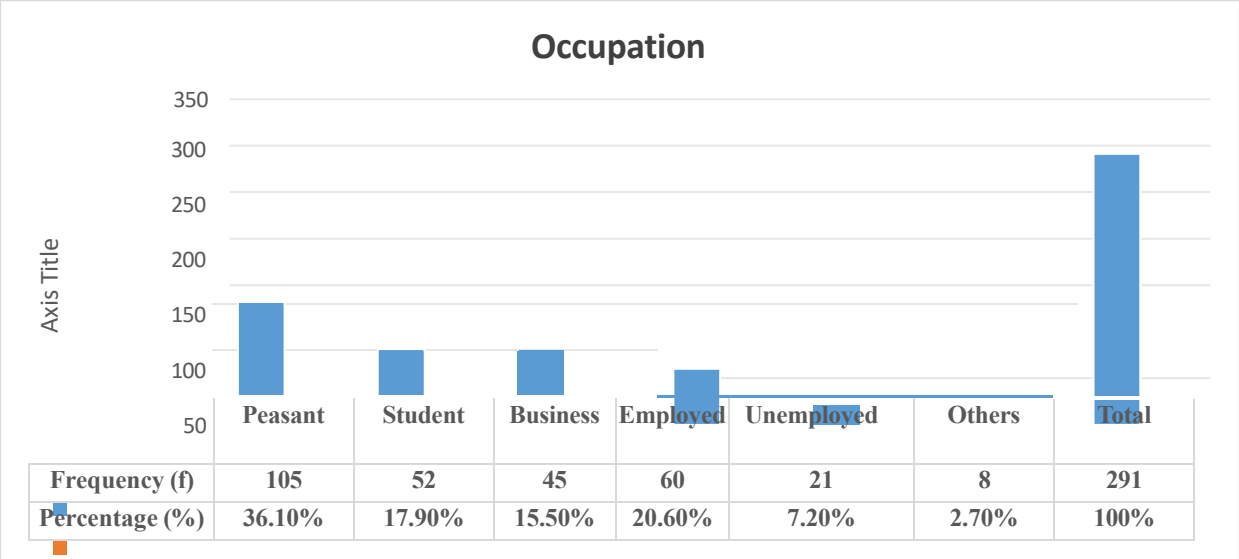
high literacy rate indicates the potential for effective dissemination of health messages and community mobilization through awareness campaigns and training activities.

Figure 1: Occupational status of respondents.



	Peasant	Student	Business	Employed	Unemployed	Others	Total
Frequency (f)	105	52	45	60	21	8	291
Percentage (%)	36.10%	17.90%	15.50%	20.60%	7.20%	2.70%	100%

Occupation

Regarding occupational status, most respondents were peasants (36%), followed by those formally employed (21%). The high proportion of peasants implies that many community members rely on subsistence farming as their main source of livelihood. This finding highlights the importance of aligning malaria intervention activities with the agricultural calendar to ensure maximum community participation. Scheduling health education and vector control activities outside peak farming seasons could enhance engagement and sustainability of malaria prevention efforts.

Need Identification Related Factors and Sustainability of Malaria Community Projects.

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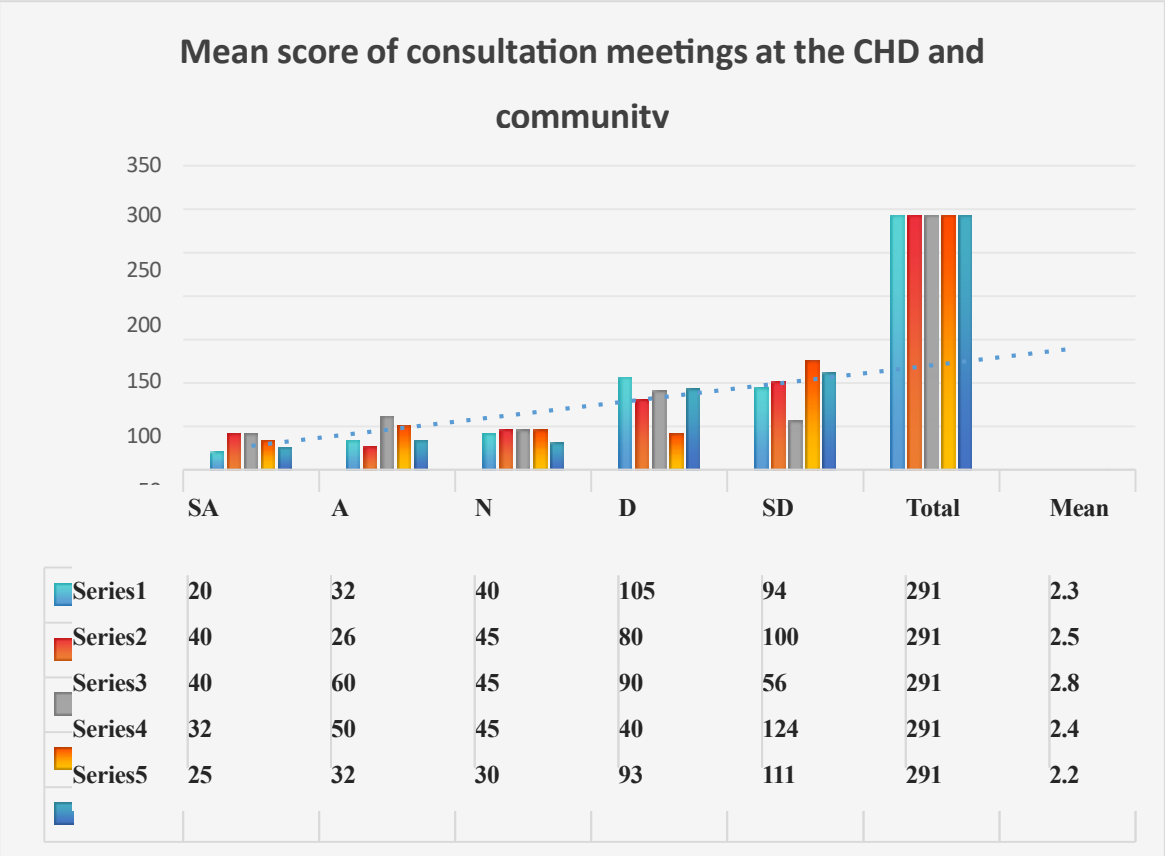
Figure 2: mean score of consultation meetings



Similarly, only 20% of respondents (SA + A) agreed that the community participated in discussions to initiate the malaria project, with a mean score of 2.2, the lowest among all items. This finding implies weak community engagement in decision-making, possibly due to limited communication or consultation by implementing officials.

Table 2: Responses on Needs Assessment (n = 291)

No.	Statement	SA	A	N	D	SD
1	Staff from the County Health Department (CHD) guided the needs assessment exercise.	85	105	40	38	23
2	Community members were asked about the health problems they faced before starting the malaria project.	75	110	35	40	31
3	Several health problems were identified, including HIV/AIDS, cholera, TB, poor sanitation, malaria, lack of drugs in health centers, etc.	95	120	30	25	21
4	Malaria was considered the number one health problem by all participants.	110	105	40	25	11

SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree.

The data indicate that the needs assessment process was well-guided and inclusive. Most respondents agreed that staff from the County Health Department (CHD) played a key role in guiding the exercise, with 85 respondents strongly agreeing and 105 agreeing, showing strong technical support during planning.

A substantial portion of respondents (75 strongly agreed and 110 agreed) confirmed that community members were asked about their health problems before initiating the malaria project. This demonstrates that community perspectives were taken into account, ensuring that interventions were relevant to local realities.

Additionally, the majority of respondents (95 strongly agreed and 120 agreed) recognized that several health problems were identified, including HIV/AIDS, cholera, tuberculosis, poor sanitation, and lack of essential drugs. This suggests a comprehensive assessment that captured multiple health priorities in the community.

Finally, most respondents (110 strongly agreed and 105 agreed) stated that malaria was considered the number one health problem by all participants. This strong consensus confirms that malaria was correctly prioritized as the community's main health concern, justifying the malaria-focused project.

Correlation between Need identification and the sustainability of Malaria community projects.

To determine both the significance of the relationship between the variables and the degree of their association, a correlation analysis was performed. The correlation was done to establish the extent to which needs identification affects the sustainability of community malaria projects. The findings in Table 4.3 show that the relationship between the two variables was significant ($r = 0.423$, $p < 0.05$). However, the coefficient of correlation from Pearson's product-moment indicated that the relationship between the variables was moderate.

Table 3: Correlation between needs identification and sustainability

		Sustainability	Needs identification
Sustainability	**Pearson Correlation**	**1**	**.423****
	Sig. (2-tailed)		**.000**
	N	**291**	**291**
Needs identification	**Pearson Correlation**	**.423****	**1**
	Sig. (2-tailed)	**.000**	
	N	**291**	**291**

. Correlation is significant at the 0.01 level (2-tailed).

Regression between needs identification and sustainability

Regression analysis was conducted to determine how the dependent and independent variables related to each other and their level of significance. Table 4 shows the model summary of the results. From the results, there was a high relationship between the dependent and independent variables, as the coefficient of determination, where r, was ($r = 0.178$). The R-square shows that the needs identification and sustainability used in the study accounted for 17.8% of the variance in the sustainability of malaria community projects.

Table 4: Model Summary for Needs Identification Model Summary

Model	R	R Square	Adjusted R Square Std.	Error of the Estimate
1	.423[a]	.0.178	.462	2.77554

Predictors: (Constant), Needs identification.

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Discussion

Relationship Between Problem Identification and Sustainability of LMP

The relationship between problem identification and project sustainability, while statistically significant, was found to be moderate (r = 0.423), accounting for only 17.8% of the variance in sustainability. This finding suggests that while aligning a project with a recognized community need is a necessary first step, it is insufficient on its own to guarantee long-term success. Our data reveal the reason for this modest relationship: the process was more externally facilitated than community-led. Despite malaria being correctly prioritized as the top health concern (74% agreement), direct community participation in consultation meetings was critically low, and decision-making was largely driven by the County Health Department (CHD).

This finding resonates with the cautions of Arnstein (1969), whose "ladder of citizen participation" would classify this level of involvement as "tokenism," where consultation occurs without the transfer of real decision-making power. The consequence, as observed in the study, is a weak foundation for local ownership. This is consistent with the broader context in South Sudan, where a history of top-down programme implementation has failed to build community capacity, as noted in the Documentation of the Community Capacity Building Experience in South Sudan (Sandra & Jonathan, 2000). Our results corroborate the principles of participatory development, which posit that active involvement in defining one's own problems fosters a stronger commitment to sustaining outcomes (Howard-Grabman & Snetro, 2002; WHO, 1991). The LMP's experience demonstrates that without this deep engagement, even a highly relevant project struggles to instill the sense of identification and continuing responsibility required for sustainability, a challenge also noted in assessments of other health projects by Rifkin et al, 1988.

Conclusion

While the Local Malaria Project was highly relevant to the expressed health needs of Juba City, the process of problem identification was symbolic rather than substantive. The externally-driven, top-down consultation process failed to instill a strong sense of ownership among community members. Consequently, this limited ownership only weakly contributed to the project's potential for sustainability, underscoring that the how of identifying problems is just as critical as the what.

Limitations

The study was constrained due to the limited time available for data collection; the researcher could not fully engage with all members of the community and stakeholders, which impacted the comprehensiveness of the findings.

Due to budget and logistical constraints, it was not possible to reach every household that was selected, nor was it possible to conduct follow-up visits to the extent planned.

Some selected participants were unavailable or unwilling to participate, which posed a risk of non-response bias.

Certain areas of Juba City were difficult to access due to poor infrastructure and localized security challenges.

Data on community knowledge and participation were affected by recall bias and social desirability bias among some respondents.

Differences in language and cultural understanding sometimes led to misinterpretation of questions by respondents.

Recommendations

Project implementers should move beyond simple consultations and adopt participatory rural appraisal (PRA) tools to facilitate genuine community-led problem identification and prioritization.

The South Sudan National Malaria Control Programme should integrate guidelines that mandate and provide a framework for deep community consultation and consensus-building on health priorities as a prerequisite for project funding and approval.

Source of funding.

The study did not receive any financial support.

Conflict of interest

The author declares no conflict of interest

Data availability

Data was available upon request

Author Biography

Peter Mut Liep Dhoal is a student at Team University, Kampala, Uganda, pursuing a Master's in Public Health

Author contributions

Peter Mut Liep Dhoal was the author, and Dr. Gerald Kabuye was the research supervisor

List of acronyms

- CHD- County Health Department

- CHO- County Health Officer
- CMD - Community Medicine Distributors
- NGO – Non-Government Organization
- PHC – Primary Health Care
- SPSS – Statistical Package for Social Scientists.
- VHT – Village Health Teams
- WHO - World Health Organization

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