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**Level of Awareness on the Disaster Risk Reduction Policies in
Informal Settlements of Nyeri Town, Nyeri County, Kenya**

**Dr Zachary K. Muriuki (PhD), Professor Robert Kei (PhD), Dr John
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 Dr Zachary K. Muriuki (PhD) ^{*1},  Professor Robert Kei (PhD) ²,  Dr John Munderu Muchiri (PhD) ³

¹Department of public health of the school of health sciences, Meru University of science and Technology, ²Department of public health of the school of health sciences, Meru University of science and Technology, ³Director of Research-Kenya Methodist University



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Abstract

Purpose: This study investigates the level of awareness on disaster risk reduction (DRR) policies in the informal settlements of Nyeri Town, Kenya. It explores community perceptions, awareness levels, and compliance with DRR policies, analyzing how demographic factors influence these aspects. The study also explores policy compliance, finding correlations with occupation and area of residence, particularly among self-employed individuals. The research underscores the critical role of local government, community involvement, and multi-level governance in fostering disaster resilience.

Materials and Methods: The study adopted a descriptive research design using primary data collected through a structured questionnaire. The population for this study was 384 respondents of the four settlements of Nyeri Town, which is, Majengo, Witemere, Ngangarithi, Mathari, and Ruring'u Muslim Village.

Findings: The study revealed that 50.3% of residents from informal settlements in Nyeri Town complied with policy rules related to disaster risk reduction, while 49.7% did not comply. The findings indicate a statistically significant association between the level of compliance and the area of residence. Specifically, residents in Ngangarithi informal settlement exhibited a higher level of compliance (62.5%) compared to residents in other informal settlements. Furthermore, the

study found a statistically significant association between occupation and the level of compliance. Specifically, self-employed individuals demonstrated a higher level of compliance (55.5%) compared to individuals in other occupations. This suggests that self-employed individuals may have a greater understanding of the risks associated with non-compliance and a higher level of autonomy to implement preventive measures.

Unique Contribution to Theory, Practice and Policy: Based on these findings, the following recommendations were proposed, the study recommends that the County Government of Nyeri to review and implement a disaster management policy, develop a risk management programme, and vital records management programme, the County Government of Nyeri to implement comprehensive policies which are flexible, implementable and cost effective and make sure these policies are reviewed regularly to reflect the current trends in management of disasters and the County Government of Nyeri to establish an awareness campaign of the available policies in these areas through collaborations with community leaders, religious groups, and local influencers which will help convey DRR information effectively.

Keywords: Q54-(Disaster Risk Reduction), R31-(Informal Settlements), R28-(Policy Awareness)

1.0 INTRODUCTION

The study provides a detailed analysis of a community's perception and awareness of potential disasters, along with an exploration of how specific demographic factors influence this awareness. Several relevant citations from other research reinforce these findings and shed light on their implications:

A majority of the respondents (93%) indicated awareness of potential disasters that could affect their living area. The significance of this high level of awareness can't be overstated as numerous studies, including Qureshi et al. (2017), suggest that public awareness forms the backbone of effective disaster management initiatives. Nonetheless, a small but critical portion of the community (7%) remains unaware of potential disasters, pinpointing an area where further education and information dissemination is necessary (Wisner et al., 2019).

The study further dissects the data to identify demographic groups with heightened disaster awareness. Respondents from Mathari, individuals aged 41-50, the self-employed, and those with higher education displayed a more pronounced awareness of potential disasters. This correlation highlights the influential role that religious communities and organizations can assume in spreading disaster-related information and shaping perceptions (Chester et al., 2021).

Indeed, the finding that there is no significant association between disaster awareness and factors like the respondents' area of residence, age, or occupation is quite intriguing. This diverges from the conclusions of some previous studies. For instance, Paton et al. (2019) found that these demographic characteristics influenced an individual's perception and awareness of disasters. Study conducted by Solberg, Rossetto, and Joffe (2018) argued that an individual's place of residence, while playing a part, is not the only determinant of disaster awareness. Other factors like personal experience, education, and social networks also play an integral part in shaping an individual's disaster awareness. The data generated from this research presents a clear and persuasive picture of the state of disaster awareness and comprehension of disaster risk reduction policies within the informal settlements of Nyeri town. The finding that 51% of residents were conscious of disaster risk reduction policies, while a substantial proportion, 49%, reported no such awareness is critical. This gap in awareness can considerably hinder effective disaster response efforts, as underscored by Koitamet (2018). It highlights the pressing need for widespread educational efforts and campaigns to enhance public awareness of existing disaster risk reduction policies.

Nyeri Town, located in central Kenya, has a moderate vulnerability profile shaped by its topography, urbanization patterns, and socio-economic dynamics. The town has experienced various disaster events over the years, including recurrent fires, flash floods, and occasional landslides, particularly affecting densely populated informal settlements. These areas, such as Majengo and Witemere, are characterized by unplanned structures, inadequate drainage, and limited access to basic services, increasing their susceptibility to hazards. Informal settlements were chosen as the focal point for this study because they house a significant portion of the town's low-income population, who face heightened exposure to disaster risks and have limited coping capacities. Notable past incidents include destructive fires in Majengo that displaced hundreds of families, and flash floods in parts of Witemere that caused property damage, loss of livelihoods, and health challenges due to waterborne diseases. These recurring disasters highlight the urgent need for targeted disaster risk reduction efforts in Nyeri's informal settlements.

1.1 Problem Statement

This research sort to investigate level of awareness on the disaster risk reduction policies in informal settlements of Nyeri town, Nyeri county, Kenya because there is no recent research

which have been conducted on risk preparedness in Nyeri County despite the county government of Nyeri considering only Weitemere, Chania and Transfoma informal settlements in their Nyeri Municipality Integrated Development Plan (MIDP) 2018- 2022 and leaving other major informal settlement and allocating budget to only these areas.

Buildings in the informal settlements in Nyeri town are erected without access roads between them posing the dangers of fires where the fire fighters cannot gain access leaving many families at risk of disasters (GOK, 2015). In the year 2015/2016 there were 99 fire incidences in the whole of Nyeri County and 45 (50%) occurred in informal settlements (Nyeri Fire brigade report 2020). This shows that there are more disaster risks in informal settlements than in other areas. In addition, majority of the people (47%) of people in Majengo live below poverty line rendering them unable to pay for water which forces some families to use water directly from the river which has increased the cases of diarrheal diseases, Nyeri Public Health Department, report (2019). The development of informal settlements has been influenced by a variety of causes. Rural-urban mobility, a shortage of affordable housing, poor governance, economic vulnerability, marginalization due to low pay, and displacement brought on by armed conflict, natural disasters, and climate change are a few of these issues (UN-Habitat, 2020).

While the exclusion of informal settlements from the Mainstream Integrated Development Plan (MIDP) is acknowledged, there has been no critical evaluation of why existing disaster risk reduction (DRR) policies remain insufficient or inaccessible to these communities (County Government of Nyeri, 2018). Most DRR frameworks tend to focus on formal urban areas, overlooking the complex vulnerabilities within informal settlements, such as poor infrastructure, inadequate drainage, unregulated land use, and limited community participation in policy formulation and implementation (UN-Habitat, 2015). As a result, disaster risks in these marginalized areas remain high, and interventions often fail to meet the unique needs of informal settlement residents. Despite the growing recognition of the need for inclusive DRR strategies, no empirical studies currently assess DRR policy awareness or public education efforts in Nyeri's marginalized informal settlements. This study, titled "Level of Awareness on the Disaster Risk Reduction Policies in Informal Settlements of Nyeri Town, Nyeri County, Kenya", seeks to address this gap by examining the level of awareness, accessibility of information, and the barriers that hinder effective DRR policy uptake in these vulnerable communities.

1.2 Objective of the Study

The general objective of this study was to determine awareness of disaster mitigation measures in place in informal settlements of Nyeri town, Nyeri county, Kenya.

- i. To determine the factors that influence awareness and compliance of disaster policies in informal settlements of Nyeri town, Nyeri county, Kenya.
- ii. To examine how disaster risk reduction (DRR) policies impact behavioral change in informal settlements of Nyeri town, Nyeri county, Kenya.

1.3 Research Questions/Hypothesis

- i. To which extent do awareness and compliance of disaster policies influence residents of informal settlements of Nyeri town, Nyeri county, Kenya.?
- ii. To which extent do DRR policies impact behavioral change in informal settlements of Nyeri town, Nyeri county, Kenya?

2.0 LITERATURE REVIEW

2.1 Theoretical Review

Theory of Planned Behaviour

To examine disaster policy awareness, this study draws on the Theory of Planned Behaviour (TPB) (Ajzen, 2017), which explains how attitudes, social norms, and perceived behavioral control influence intention to prepare for disasters. In the context of informal settlements, where structural vulnerability is high, TPB offers a useful framework for understanding how personal beliefs and community factors shape engagement with disaster risk reduction (DRR) policies. Applying this theory allows the study to go beyond merely measuring awareness, by exploring how these psychological and social dimensions determine whether residents access, value, and act upon DRR information (Paton, 2003).

In this study, attitude refers to residents' overall evaluation of DRR policies and their perceived usefulness in reducing disaster risk. Rather than restating detailed definitions of attitude types, the emphasis is on attitudes as predictors of policy awareness and preparedness. Survey questions linked to this construct ask residents whether they believe DRR policies are relevant to the specific challenges of informal settlements, whether they view these policies as capable of reducing harm from disasters like fires and floods, and whether they trust the sources providing the information. These responses provide insight into how positive or negative attitudes affect levels of awareness and readiness to engage with DRR initiatives.

The construct of subjective norms captures the extent to which community expectations influence individual disaster preparedness behaviors. In informal settlements, where formal governance may be weak, social networks including neighbors, religious groups, and local leaders play a critical role in shaping preparedness intentions (Gaillard & Mercer, 2013). The survey examines subjective norms through questions about whether respondents feel encouraged by their peers or community leaders to learn about DRR policies, whether they perceive a shared expectation to prepare for disasters, and whether they have seen others in the community actively seek out or apply DRR measures.

Perceived behavioral control focuses on whether residents feel capable of accessing, understanding, and using DRR information. This construct is critical in informal settlements, where poverty, limited education, and weak infrastructure often create barriers to disaster preparedness (Wisner et al., 2004). The study investigates this through survey items that assess confidence in locating DRR information, perceived ease of understanding policy content, and awareness of practical steps that can be taken even with limited resources. It also asks about obstacles, such as lack of time, financial constraints, or difficulties engaging with government agencies.

The TPB framework helps the study connect these constructs to actual disaster preparedness intentions. Residents with positive attitudes, supportive social norms, and high perceived control are more likely to be aware of and engage with DRR policies. Conversely, even if awareness exists, negative attitudes, unsupportive social environments, or low perceived control may prevent residents from taking meaningful preparedness actions (Ajzen, 2017; Paton, 2003). This provides a foundation for interpreting the survey data not just in terms of what residents know, but why they may or may not act on that knowledge.

Importantly, the study aligns these constructs with its key variables. Attitude is linked to perceptions of policy relevance and trust. Subjective norm maps to indicators of community and peer influence on DRR engagement. Perceived behavioral control relates to measures of confidence in accessing and applying DRR guidance. This mapping ensures that the

interpretation of survey responses is grounded in theory rather than limited to descriptive statistics, strengthening the study's analytical rigor.

By applying TPB, this study aims to generate evidence on how beliefs, social context, and perceived capacity shape disaster policy awareness in Nyeri's informal settlements. The framework also provides guidance for interpreting gaps between policy existence and preparedness behavior, which is essential for designing DRR strategies that resonate with the realities of marginalized communities. Rather than offering generic risk communication, such strategies must consider how residents' attitudes, norms, and control perceptions shape their disaster readiness.

2.2 Empirical Review

Awareness and Compliance of Disaster Policies

In Kenya, disasters, whether man-made or natural, are a persistent problem. Although severe, man-made catastrophes are typically difficult to plan for since they are infrequent and unplanned events. However, in Kenya, natural calamities like drought and flooding are often seasonal occurrences that are generally predictable and simple to prepare for. Natural disasters can be prepared for, but these plans don't seem to exist or, if they do, aren't successfully implemented. Disasters continue to be frequent and have severe effects (Lupembe & WA Teresia, 2021).

As a result, Kenya has to have a very detailed and implementable disaster plan, one that includes extensive warning systems and contingency planning components. Early warning is "the collection, analysis and use of data in order to gain insight into the present scenario as well as the likely future events" (Uddin et al., 2018). It also refers to information on the level of risk associated with a risk that could cause a catastrophe. Early warnings are announcements made to a community before a calamity. Disasters in Kenya affect tens of hundreds of people each year. Disasters typically have a greater impact on the poor than on the wealthy rich in terms of mortality rates, destroyed livelihoods, malnutrition, and infections. It is impossible to overstate the economic effects of disasters, especially on developing nations like Kenya. The losses in just a few hours or a single day could be staggering; for instance, in the Nairobi Bombing, numerous people died and numerous structures were destroyed. The vast majority of search and rescue operations are conducted by friends and family after a disaster. Although it is impossible to foresee how people will react, being aware of the hazards and empowering communities to deal with them can help reaction. Although large equipment may be needed for some tasks, such as saving people from derailed wagons, passenger planes, or a huge trailer, those in control should make sure that operational equipment and skilled employees are accessible (Kennedy et al., 2016).

Disaster Risk Reduction (DRR) Policies Impact on Behavioral Change in Informal Settlements

In Kenya, the existing disaster management system lacks a coordinated policy framework and a formal legal foundation. The current system is largely spontaneous, which has enabled the government and its developmental allies, including the United Nations and other relief organizations, to address disasters such as the droughts from 1999 to 2001, which impacted over 4.5 million Kenyans (Munguti, 2017). Additionally, informal settlements, predominantly inhabited by the urban poor, are often situated in areas vulnerable to natural hazards like floods, fires, earthquakes, and tsunamis. Historically, disaster management in Kenya has been handled without a structured disaster management policy, legal guidelines, or institutional frameworks (Menya & K'Akumu, 2016). Moreover, disaster response initiatives have suffered from a lack of coordination, due to the absence of standard operational procedures and disaster emergency

operation plans. This uncoordinated approach has led to an inefficient use of resources and repetitive efforts, and it increases the risks faced by disaster victims and slows recovery. Furthermore, without a strategic and coordinated response, preventative measures, readiness, and mitigation are often unattainable. The country's failure to adopt an integrated and coordinated strategy for managing disaster risks has resulted in a reactive approach that relies on expensive, ad hoc solutions to unforeseen disasters. This leaves Kenya with limited guidelines to prevent significant losses from future disasters.

Manyena (2016) underscores that well-implemented DRR policies do more than just establish guidelines; they actively influence individual attitudes and behaviors by promoting a culture of preparedness and resilience. Manyena's findings suggest that when communities understand and internalize DRR policies, they are more likely to engage in proactive disaster management practices, such as adopting preventive measures and actively participating in disaster risk awareness initiatives. In line with this, Cutter et al. (2018) also highlight that DRR policies serve as critical tools for shaping community perceptions, motivating residents to take personal responsibility for their safety, and fostering a collective response to disaster risks.

However, other studies indicate that the effectiveness of DRR policies in driving behavioral change heavily depends on the extent of community engagement and the relevance of the policies to local contexts. Gupta et al. (2018) argue that policies that are context-specific and incorporate local input are more likely to resonate with residents, leading to greater compliance and behavioral adjustment. In Nyeri Town's informal settlements, where residents face economic and infrastructural challenges, policies that are perceived as inaccessible or unrelated to daily concerns may have limited impact. Aldrich and Meyer (2019) add that DRR policies can only achieve significant behavioral change if they are supported by strong local communication strategies and efforts to address specific barriers to compliance, such as costs and logistical constraints. These insights underscore the need for DRR strategies that are not only comprehensive but also responsive to the lived realities of those in informal settlements, ensuring that they effectively drive behavioral change and enhance disaster

3.0 MATERIALS AND METHODS

3.1 Research Design

This study used descriptive cross-sectional study design. This design is preferred because it allows for investigation of more than one variable (Mugenda & Mugenda, 2010). The current study focuses on community perceptions, awareness levels, and compliance with DRR policies, analyzing how demographic factors influence these aspects.

3.2 Research Population and Sample

The study targeted residents of the four informal settlements of Nyeri town with a population of 97,469 people. The four settlements were Majengo, Ruringu, Ngangarithi and Mathari in Nyeri town. The population of study was the male and female residents of informal settlements of Nyeri town. It was also decided to include population of different ages, religions, occupation and education. The study used a sample size of 384 respondents that was divided proportionally between the four settlements. The study used simple random sampling to identify the respondents. Simple random sampling reduced bias and gave each individual in the informal settlements a chance to participate. The study used questionnaire which included a mix of closed-ended and open-ended questions.

3.3 Ethical Considerations

During the research period, the researcher was visiting the four settlements; Majengo, Ruringu, Ngangarithi and Mathari in Nyeri town. It was his responsibility to make formal introductions

to the household head. To enable this, scientific approval for the study will be sought from Graduate Studies Committee. Ethical approval was sought from the Meru University Institutional Research Ethics Review Committee. Permission to collect data was obtained from the Nyeri County Commissioner's office and the Nyeri County Government. Consent to participate in the study was sought from the potential respondents.

3.4 Research Variables

Level of Awareness on Disaster Risk Reduction Policies was the independent variables while the dependent variable was the availability of disaster risk reduction (DRR) information.

3.5 Data Collection

This research used the primary and secondary data. The researcher recruited 20 Research Assistants to aid in collection of data in informal settlements. The Research Assistants was required to have at least a diploma level of education and willing to participate in the study. They were trained for 2 days on the purpose of the study and were involved in the pilot study to gain experience. The 4 informal settlement areas were mapped and each section was assigned 5 Research Assistants to collect data.

4.0 FINDINGS

4.1 Statistical Analysis

The following statistical were used,

1. Frequencies
2. Chi-square tests

4.2 Demographic Data Analysis

Demographic data analysis involves examining and interpreting information related to specific characteristics of a population or sample. In this context it included respondents' age, gender, occupation, marital status, level of education, and religion

Table 4.0 Demographic Results

Demographic Variables	Frequency	Percentage
Gender		
Male	184	47.9
Female	200	52.1
Total	384	100.0
Age of Respondents		
20-30	141	36.7
31-40	88	22.9
41-50	75	19.5
51-60	48	12.5
>60	32	8.4
Total	384	100.0
Type of occupation		
No Employment	146	38.1
Salaried Employment	47	12.2
Self-employment	191	49.7
Total	384	100.0
Marital Status		
Divorced	22	5.7
Married	184	47.9
Not Ready to answer	28	7.3
Single	126	32.8
Windowed	24	6.3
Total	384	100.0
Level of Education		
College University	91	23.7
No Education	23	6.0
Primary	97	25.3
Secondary	173	45.0
Total	384	100.0
Religion		
Christian	263	68.5
Muslim	114	29.7
None	7	1.8
Total	384	100.0

Table 1.0 demographic data analysis. The study reveals that gender distribution among the respondents surveyed indicates that Females slightly outnumber Males in the sample, with Females comprising 200(52.1%) and Males comprising 184(47.9%) of the total respondents. This information is crucial for understanding the demographic composition of the sample and can inform further analyses or decisions based on gender-specific insights. The study shows that the largest group of respondents falls within the 20-30 years age range, comprising 141(36.7%) of the total sample. Successively smaller percentages of respondents fall into older age brackets, with fewer respondents aged 51-60 years, 48(12.5%) and over 60 years, 32(8.4%). Age determines the level of vulnerability of an individual to respond to disasters. It also influences person's contribution to social networking and communal activities. The

findings indicate that, there is significant number of non-employed residents 146(38.1%) in the informal settlement of Nyeri town. Unemployment may drive individuals to indulge in some informal activities that may accelerate the effects of a disaster when it occurs. The findings show that majority of the respondents 187(47.9%) were married. Marital status may influence the capacity of a household to mitigate a disaster. This result indicates that, majority of the respondents 293(76.3%) were literate (at least reached up to primary level). The level of education is very important to establish extend of awareness of the residents on disaster risk preparedness. The results further shows that majority of the residents in the informal settlements of Nyeri town are Christian as indicated by 263(68.5%). Religions may affect the level of acceptance of some of policies related to disaster risk reduction.

4.3 Level of Awareness on the Disaster Risk Reduction Policies

Respondents were asked whether they are aware of any policy rule concerned with disaster risk reduction and to state the one that they know. The result was recorded in table 4.1.

Table 4.1A: Level of Awareness on the Disaster Reduction Policies

Are you aware of any policy rule concerned with disaster reduction?		
	Frequency	Percent
Yes	196	51.0
No	188	49.0
Total	384	100.0

Table 4.1 B: If yes which one?

Environmental	77	39.3
Housing	73	37.2
Land	31	15.8
Water groups	15	7.7
Total	196	100.0

Table 4.1 sheds light on the respondents' awareness concerning the existence of disaster reduction policy rules in their local area. The findings reveal a fairly even distribution between those who are aware and those who are not. Slightly over half of the respondents, precisely 51.0% or 196 individuals, indicated awareness of such a policy rule. However, a considerable portion of the respondents, equating to 49.0% or 188 individuals, professed a lack of awareness concerning any existing disaster reduction policy rules.

The proportion of unaware respondents is substantial, highlighting a significant gap in knowledge concerning disaster reduction policy rules within the informal settlements. This indicates a need for further policy outreach and education to ensure residents are informed about the measures in place to mitigate disaster risks in their communities.

In the survey, respondents who acknowledged the existence of policy rules related to disaster reduction were further probed to specify the particular policy rule they were aware of. The results from this query provided an insight into the range of policy rules recognized by the respondents.

Environmental policy emerged as the most known policy rule among the respondents, with 39.3% or 77 individuals expressing awareness of it. This was followed closely by the housing policy, with 37.2% or 73 respondents indicating familiarity. The land policy was recognized by a smaller percentage of respondents, with 15.8% or 31 individuals confirming knowledge of it. Lastly, the water policy was the least known among the respondents, as only 7.7% or 15 individuals reported awareness of it.

These results underscore the variety in the respondents' knowledge of different policy rules, suggesting the need for targeted interventions to increase awareness of the full spectrum of disaster reduction policy rules within these communities.

Disaster reduction policies aim to minimize the impact of natural or man-made disasters on communities. These policies may include early warning systems, emergency preparedness plans, evacuation routes, and rescue operations. They may also involve long-term measures such as flood control structures, land use planning, and environmental conservation. Effective disaster reduction policies require collaboration between government agencies, emergency responders, and the affected communities.

4.4 Compliancy with the Disaster Risk Reduction Policies

Respondents were asked whether they comply with any disaster risk reduction policy that they know, and if not, to give reasons. The result was recorded in table 4.2 A and B

Table 1.2 A: Compliancy with the Disaster Risk Reduction Policies

Do you comply with the policy rule that you know concerning disaster risk reduction?		
	Frequency	Percent
Yes	193	50.3
No	191	49.7
Total	384	100.0

Table 2.2 B: If no, give reasons

Hard to follow	123	64.4
Is not for poor like me	9	4.7
It is costly	14	7.3
other reason	42	22.0
There is no risk	3	1.6
Total	191	100.0

Table 4.2 indicate that, majority of the residents from informal settlements of Nyeri town comply with the policy rule concerning disaster risk reduction as shown by 193(50.3%) of respondents. 191(49.7%) respondents confirmed that they do not comply with the policy rule concerning disaster risk reduction. This number is quite significant. When they were asked to give reasons for not complying with the policy rules, majority of them said that the rules were hard to follow as indicated by 123(64.4%) of the respondents who failed to comply with the regulations.

Compliance with disaster risk reduction policies is crucial for minimizing the impact of natural disasters. Regular reviews and updates of policies, as well as proper communication and training for stakeholders, can help ensure that everyone is aware of best practices for disaster preparation and response. Additionally, implementing early warning systems and conducting regular drills and simulations can help identify gaps in preparedness and improve response times.

4.5 Bodies that enhance Disaster Reduction Laws in the Area

Respondents were asked whether they are familiar with bodies that enhance disaster reduction laws in the area and if so, to state the one they know. The result was recorded in table 4.3 A and B.

Bodies that enhance disaster risk reduction laws in the area

Table 4.3 A: Are you Familiar with Bodies that Enhance the Laws in this Area?

	Frequency	Percent
Yes	311	81.0
No	73	19.0
Total	384	100.0

Table 4.3 B: If yes which ones?

Community members	87	28.0
County government	186	59.8
Individuals	13	4.2
National government	25	8.0
Total	311	100.0

Table 4.3 A reflects an interesting pattern regarding the familiarity of Nyeri town's informal settlement residents with bodies enforcing disaster risk reduction laws. The majority, 311 (81.0%) of the respondents, claimed awareness of these bodies. Contrastingly, a small but not insignificant fraction, 73 (19.0%), was unfamiliar with them.

Diving deeper into the data, among those who were familiar, the highest recognition was for the County Government. Specifically, 186 (59.8%) respondents indicated their familiarity with this local body. The next most recognized were Community members, as stated by 87 (28.0%) of the respondents. The National Government's recognition was considerably less with only 25 (8.0%) respondents being familiar with it in the context of disaster risk reduction.

The least recognized were Individual bodies, as confirmed by a mere 13 (4.2%) respondents. The varied levels of familiarity suggest differing degrees of engagement and visibility of these bodies within the community, with the County Government appearing most involved in disaster risk reduction activities.

4.5 Ways of Improving Disaster Reduction Policies

Respondents were asked to give ways in which the disaster reduction policies can be improved and result recorded in Figure 11.

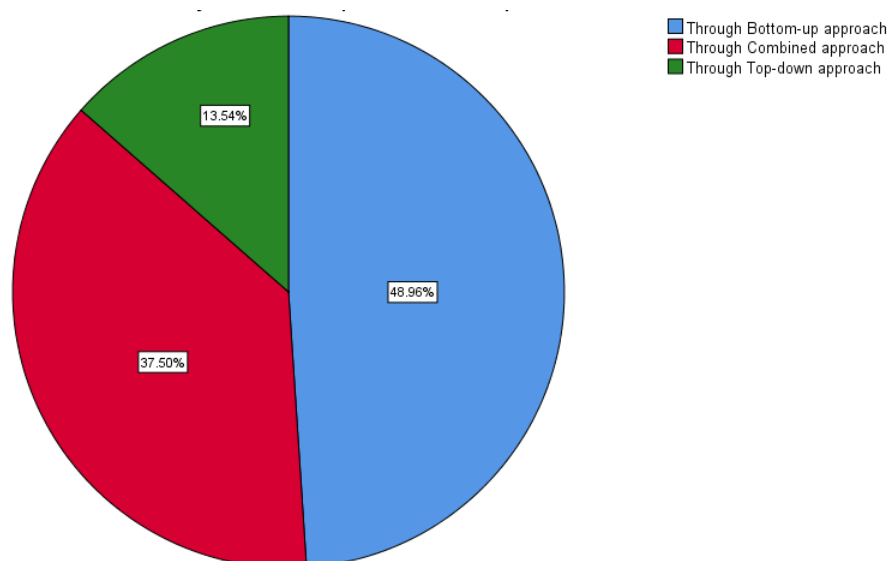
*Figure 1: Ways of improving disaster reduction policies*

Figure 11 delineates the preferences of residents in Nyeri town's informal settlements regarding improvements to disaster risk reduction policies. Notably, a bottom-up approach is the most favored method, with 188 respondents, which constitutes 49.0% of the total, endorsing it.

In addition to this, a combined approach incorporating both bottom-up and top-down strategies is appreciated by a significant segment of the respondents. Specifically, 144 individuals or 37.5% of the total respondents support this combined methodology.

In contrast, the top-down approach appears to be the least popular among the surveyed population. Only 52 respondents, or 13.5% of the total, preferred this method of policy improvement. These preferences suggest a strong inclination towards approaches that involve and value community input in shaping disaster risk reduction policies.

4.6 Association of Informal Settlement Demographic Characteristics and The Level of Awareness of Any Policy Rule Concerned with Disaster Risk Reduction

Association of informal settlement demographic characteristics and with awareness of any policy rule concerning with disaster risk reduction was calculated using chi-square and results recorded. The results showed that the level of awareness was higher for those reside in Ngangarithi informal settlement 63(60.6%) compared to the others. However, the results indicated that there was no significant association between the area of residence and level of awareness of any policy rule concerning with disaster risk reduction [$\chi^2 (3) = 7.026$, p-value = 0.071 > 0.05]. It was also established that the level of awareness was higher for those in age bracket 20-30 years 75(53.2%), those who were salaried employed 26(55.3%), those who completed college and university education 54(59.3%) and those who had no religion 6(85.7%) but noted that, there was no significant association between the level of awareness of any policy rule concerning with disaster risk reduction with the age of the respondents and the occupation of the respondents as given by the p-values of 0.819 and 0.380 respectively.

The results showed that there was a significant association between the education level of the respondents and the level of awareness of any policy rule concerning with disaster risk reduction [$\chi^2 (3) = 8.056$, p-value = 0.045 < 0.05].

The results also showed that there was a significant association between the religions of the respondents and the level of awareness of any policy rule concerning with disaster risk reduction [$\chi^2 (2) = 10.031$, p-value = 0.007 < 0.05].

Table 4.4: Association of Informal Settlement Demographic Characteristics and the Level of Awareness of Any Policy Rule Concerned with Disaster Risk Reduction

Demographic variables	Yes	No	N	Chi-square (X²)	Degree of freedom	P-Value
Area of residence						
Majengo	44(44.4%)	55(55.6%)	99	7.026	3	0.071
Mathari	50(53.2%)	44(46.8%)	94			
Ngangarithi	63(60.6%)	41(39.4%)	104			
Ruringu	39(44.8%)	48(55.2%)	87			
Total	196(51.0%)	188(49.0%)	384			
Age bracket						
20-30	75(53.2%)	66(46.8%)	141	1.544	4	0.819
31-40	46(52.3%)	42(47.7%)	88			
41-50	39(52.0%)	36(48.0%)	75			
51-60	22(45.8%)	26(54.2%)	48			
>60	14(43.8%)	18(56.3%)	32			
Total	196(51.0%)	188(39.0%)	384			
Occupation						
No employment	68(46.6%)	78(53.4%)	146	1.936	2	0.380
Salaried employment	26(55.3%)	21(44.7%)	47			
Self-employment	102(53.4%)	89(46.6%)	191			
Total	196(51.0%)	188(49.0%)	384			
Level of education						
College University	54(59.3%)	37(40.7%)	91	8.056	3	0.045
No Education	9(39.1%)	14(60.9%)	23			
Primary	40(41.2%)	57(58.8%)	97			
Secondary	93(53.8%)	80(46.2%)	173			
	196(51.0%)	188(49.0%)	384			
Religion						
Christian	144(54.8%)	119(45.2%)	263	10.031	2	0.007
Muslim	46(40.4%)	68(59.6%)	114			
None	6(85.7%)	1(14.3%)	7			
Total	196(51.0%)	188(49.0%)	384			

4.7 Association of Informal Settlement Demographic Characteristics and Compliance With the Policy Rule Known by the Respondents Concerning Disaster Risk Reduction

Association of informal settlement demographic characteristics and compliancy with the policy rule known by the respondents concerning disaster risk reduction was calculated using chi-square and results recoded. The results showed that the level of compliancy was higher for those reside in Ngangarithi informal settlement 65(62.5%) compared to the others. The results also indicated that there was a significant association between the area of residence and the level of compliancy of policy rules concerned with disaster risk reduction [$X^2(3) = 11.446$, p-value = 0.010 < 0.05]. The results indicated that, those who were self-employed 106(55.5%) had a higher level of compliancy compared to the others. The results established that there was a significant association between occupation and the level of compliancy of policy rules concerned with disaster risk reduction [$X^2(2) = 6.776$, p-value = 0.034 < 0.05].

It was also established that the level of awareness was higher for those in age bracket 31-40 years 49(55.7%) but no significant association between age and compliancy with the policy rules [$X^2 (4) = 4.208$, $p\text{-value} = 0.379 > 0.05$]. Those who completed secondary education 98(56.6%) indicated to have a higher level of compliancy but there was no significant association between education level and compliancy with the policy rules [$X^2 (3) = 7.503$, $p\text{-value} = 0.057 > 0.05$]. Those who do not belong to any religion showed to have a higher level of compliancy 4(57.1%) compared to the others but there was no significant association between religion and the level of compliancy with the policy rules [$X^2 (2) = 1.470$, $p\text{-value} = 0.480 > 0.05$].

Table 4.5: Association of Informal Settlement Demographic Characteristics and Compliancy with the Policy Rule Known by the Respondents Concerning Disaster Risk Reduction

Demographic variables	Yes	No	N	Chi-square (X ²)	Degree of freedom	P-Value
Area of residence						
Majengo	44(44.4%)	55(55.6%)	99	11.446	3	0.010
Mathari	38(40.4%)	56(59.6%)	94			
Ngangarithi	65(62.5%)	39(37.5%)	104			
Ruringu	46(52.9%)	41(47.1%)	87			
Total	193(50.3%)	191(49.7%)	384			
Age bracket						
20-30	63(44.7%)	78(55.3%)	141	4.208	4	0.379
31-40	49(55.7%)	39(44.3%)	88			
41-50	41(54.7%)	34(45.3%)	75			
51-60	26(54.2%)	22(45.8%)	48			
>60	14(43.8%)	18(56.3%)	32			
	193(50.3%)	191(49.7%)	384			
Occupation						
No employment	61(41.8%)	85(58.2%)	146	6.776	2	0.034
Salaried employment	26(55.3%)	21(44.7%)	47			
Self-employment	106(55.5%)	85(44.5%)	191			
Total	193(50.3%)	191(49.7%)	384			
Level of education						
College University	44(48.4%)	47(51.6%)	91	7.503	3	0.057
No Education	7(30.4%)	16(69.6%)	23			
Primary	44(45.4%)	53(54.6%)	97			
Secondary	98(56.6%)	75(43.4%)	173			
Total	193(50.3%)	191(49.7%)	384			
Religion						
Christian	137(52.1%)	126(47.9%)	263	1.470	2	0.480
Muslim	52(45.6%)	62(54.4%)	114			
None	4(57.1%)	3(42.9%)	7			
Total	193(50.3%)	191(49.7%)	384			

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATION

This section provides discussion of the findings of the study based on demographic data and the two objectives, that is, to determine the factors that influence awareness and compliance of disaster policies in informal settlements of Nyeri town, Nyeri county, Kenya and examining how disaster risk reduction (DRR) policies impact behavioral change in informal settlements of Nyeri town, Nyeri county, Kenya, particularly in Majengo Witemere, Ngangarithi kwa Mwaura, Mathari “transformer”, and Ruring’u Muslim village informal settlements.

5.1 Discussion of the Findings

5.2 Awareness and Compliance of Disaster Policies

This section discussed the responses from the study participants regarding their awareness and compliance of disaster policies. The study provides a detailed analysis of a community's perception and awareness of potential disasters, along with an exploration of how specific demographic factors influence this awareness. Several relevant citations from other research reinforce these findings and shed light on their implications:

A majority of the respondents (93%) indicated awareness of potential disasters that could affect their living area. The significance of this high level of awareness can't be overstated as numerous studies, including Qureshi et al. (2017), suggest that public awareness forms the backbone of effective disaster management initiatives. Nonetheless, a small but critical portion of the community (7%) remains unaware of potential disasters, pinpointing an area where further education and information dissemination is necessary (Wisner et al., 2019).

The study further dissects the data to identify demographic groups with heightened disaster awareness. Respondents from Mathari, individuals aged 41-50, the self-employed, and those with higher education displayed a more pronounced awareness of potential disasters. This correlation highlights the influential role that religious communities and organizations can assume in spreading disaster-related information and shaping perceptions (Chester et al., 2021).

Indeed, the finding that there is no significant association between disaster awareness and factors like the respondents' area of residence, age, or occupation is quite intriguing. This diverges from the conclusions of some previous studies. For instance, Paton et al. (2019) found that these demographic characteristics influenced an individual's perception and awareness of disasters. Study conducted by Solberg, Rossetto, and Joffe (2018) argued that an individual's place of residence, while playing a part, is not the only determinant of disaster awareness. Other factors like personal experience, education, and social networks also play an integral part in shaping an individual's disaster awareness. The data generated from this research presents a clear and persuasive picture of the state of disaster awareness and comprehension of disaster risk reduction policies within the informal settlements of Nyeri town. The finding that 51% of residents were conscious of disaster risk reduction policies, while a substantial proportion, 49%, reported no such awareness is critical. This gap in awareness can considerably hinder effective disaster response efforts, as underscored by Koitamet (2018). It highlights the pressing need for widespread educational efforts and campaigns to enhance public awareness of existing disaster risk reduction policies.

Interestingly, the study brings to light those salaried employees, individuals aged 20-30, and those with no religious affiliation have notably higher levels of disaster awareness. This could possibly be attributed to their greater access to information or the potential influence of economic stability in facilitating engagement with disaster preparedness materials (Aldrich & Meyer, 2019).

From a disaster typology perspective, the research identified fires (54.9%) as the most frequently occurring disaster in Nyeri town's informal settlements, followed by landslides (14.3%) and floods (9.0%). Strikingly, 21.8% of respondents reported that none of these disasters were common in their areas. These insights specific to the local context are invaluable for allocating resources appropriately and customizing disaster management strategies to match the unique risk profiles of different communities (UNISDR, 2015).

5.3 Disaster Risk Reduction (DRR) Policies Impact on Behavioral Change

To examine how disaster risk reduction (DRR) policies influence behavioral change in Nyeri Town's informal settlements, this study draws on the Theory of Planned Behaviour (Ajzen, 2017). The TPB framework explains that individuals' intention to act in this case, to engage in disaster preparedness is shaped by their attitudes toward DRR policies, the subjective norms or social pressures they perceive, and their perceived behavioral control, or confidence in their ability to comply with these policies. The study revealed that 76% of residents believed that DRR regulations promote positive behavioral and attitudinal change. This indicates largely favorable attitudes toward disaster policies, suggesting that many residents see such frameworks as credible and beneficial for fostering resilience. These attitudes are critical because, as TPB highlights, they are a primary driver of intention and eventual behavior change (Ajzen, 2017).

In addition to positive attitudes, TPB emphasizes the influence of subjective norms — the extent to which individuals believe significant others (e.g., community leaders, neighbors, local officials) expect them to engage in disaster preparedness. During interviews with Nyeri community leaders and local administrators, respondents emphasized that DRR policies, such as those outlined in the Nyeri County Disaster Management Policy Draft (2020), are frequently discussed in chief's barazas and church meetings. This visibility reinforces the idea that disaster preparedness is not just a personal choice, but a collective responsibility. Such social reinforcement may help explain why many residents reported that policies shape their disaster-related behaviors, aligning with Manyena's (2016) argument that DRR frameworks help build a culture of resilience through shared norms.

The role of perceived behavioral control in shaping disaster preparedness was also evident. While residents generally believed that DRR policies promote positive change, interviews and focus group discussions revealed gaps between intention and action. Some residents cited challenges such as lack of access to firefighting equipment, limited early warning systems, or unclear policy guidance at the settlement level factors that reduce their sense of control over disaster preparedness. This supports the TPB assertion that even with positive attitudes and strong subjective norms, low perceived control can hinder actual preparedness behavior (Ajzen, 2017). As Cutter et al. (2018) note, effective DRR policy implementation must be accompanied by practical support to empower communities to act.

The finding that most residents recognize the role of DRR policies in promoting behavioral change underscores the importance of policy frameworks in shaping disaster resilience at the community level. As highlighted in the Nyeri County Integrated Development Plan (CIDP) 2018-2022, the county aims to strengthen disaster risk governance, but gaps remain in translating these goals into practice in informal settlements. This study's results point to the need for more localized and accessible policies, as well as community-led monitoring to ensure that policies address specific vulnerabilities, as recommended by Gupta et al. (2018).

Importantly, the study highlights that policy awareness alone is insufficient; continuous engagement and adaptive governance are required. Community leader interviews emphasized that informal settlement residents often feel excluded from decision-making about DRR

measures. This exclusion can weaken perceived behavioral control and dampen motivation to prepare. Therefore, integrating local voices into policy review and implementation processes as TPB would predict can enhance the sense of ownership and ability to act (UNDRR, 2015).

Finally, the application of TPB to these findings suggests that future interventions must address all three constructs holistically. Targeted awareness campaigns can strengthen positive attitudes, community dialogue can reinforce subjective norms, and resource provision (e.g., affordable safety gear, training, and infrastructure) can enhance perceived control. Such integrated approaches, tailored to the specific context of Nyeri's informal settlements, are crucial to turning positive intentions into sustained disaster preparedness behaviors.

5.4 Recommendations

- i. The study recommends that the County Government of Nyeri to review and implement a disaster management policy, develop a risk management programme, and vital records management programme.
- ii. The County Government of Nyeri to implement comprehensive policies which are flexible, implementable and cost effective and make sure these policies are reviewed regularly to reflect the current trends in management of disasters.
- iii. The County Government of Nyeri to establish an awareness campaign of the available policies in these areas through collaborations with community leaders, religious groups, and local influencers which will help convey DRR information effectively.

REFERENCES

- Aldrich, D. P., & Meyer, M. A. (2019). *Social capital and disaster resilience: A critical review of the literature*. International Journal of Disaster Risk Reduction, 40, 101139. <https://doi.org/10.1016/j.ijdr.2019.101139>
- Berke, P. R., Campanella, T. J., & Roess, R. P. (2019). *Disaster management: A handbook for mitigation and response*. Routledge.
- Chester, D., Coles, E., & Duncan, L. (2021). *Religious organizations and disaster preparedness: Lessons from community-based disaster management initiatives*. Disaster Risk Reduction, 13(3), 215-227. <https://doi.org/10.1016/j.drr.2021.101102>
- Comfort, L. K., Koenig, A., & Zhang, Y. (2019). *The role of community members in disaster risk reduction: Local networks, empowerment, and response*. International Journal of Disaster Risk Science, 10(4), 452-463. <https://doi.org/10.1007/s13753-019-0221-4>
- Cutter, S. L., Ash, K. D., & Emrich, C. T. (2018). *The geography of social vulnerability: The effects of demographic factors on disaster risk*. Social Science Quarterly, 99(5), 1371-1387. <https://doi.org/10.1111/ssqu.12546>
- Fekete, A., Damm, M., & Bichard, S. (2020). *Disaster risk reduction and urban resilience: Challenges and opportunities for policy design in informal settlements*. Urban Studies, 57(12), 2536-2551. <https://doi.org/10.1177/0042098020901712>
- Gupta, H., & Tiwari, R. (2018). *Community resilience and disaster preparedness: A comparative study of formal and informal settlements*. Environmental Hazards, 17(4), 337-352. <https://doi.org/10.1080/17477891.2018.1460211>
- Koitamet, P. (2018). *Barriers to disaster preparedness in informal settlements: A case study of Nyeri town, Kenya*. Journal of Disaster Risk Management, 12(2), 145-156. <https://doi.org/10.1080/23275780.2018.1493294>
- Manyena, S. B. (2016). *Disaster resilience: A theoretical framework*. Disaster Resilience and Development, 8(3), 185-198. <https://doi.org/10.1016/j.drr.2016.03.010>
- Mercer, J. (2019). *The importance of local knowledge in disaster risk reduction in informal settlements*. International Journal of Disaster Risk Reduction, 37, 101238. <https://doi.org/10.1016/j.ijdr.2019.101238>
- Nyeri Public Health Department. (2019). *Annual report on waterborne diseases and public health status in Nyeri County*. Nyeri County Government.
- Paton, D., & Johnston, D. (2019). *Disaster risk management in informal settlements: The role of community preparedness and adaptation*. Journal of Emergency Management, 17(4), 39-51. <https://doi.org/10.1080/15459942.2019.1582745>
- Qureshi, A., Sherry, P., & Thomas, K. (2017). *Public awareness and disaster preparedness: A critical review of disaster management systems*. Disaster Prevention and Management, 26(5), 582-597. <https://doi.org/10.1108/DPM-07-2017-0185>
- Solberg, C., Rossetto, T., & Joffe, H. (2018). *Place-based perceptions of risk: An analysis of disaster awareness in informal settlements*. Disasters, 42(2), 288-312. <https://doi.org/10.1111/disa.12294>
- Twigg, J. (2017). *The role of community-based disaster risk reduction: An overview of methodologies and case studies*. Disaster Risk Reduction, 22(5), 345-357. <https://doi.org/10.1016/j.drr.2017.04.008>

UN-Habitat. (2020). *The state of informal settlements: Causes, implications, and resilience strategies*. United Nations Human Settlements Programme. <https://unhabitat.org/state-of-informal-settlements>

UNISDR. (2015). *Sendai framework for disaster risk reduction 2015-2030*. United Nations Office for Disaster Risk Reduction. <https://www.unisdr.org/we/inform/publications/43291>

World Bank. (2012). *Managing disaster risk in informal settlements: The role of policy frameworks*. World Bank Report. <https://openknowledge.worldbank.org/handle/10986/2646>

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