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The Attitudes of Households for Disaster Risk Management in Fogera, Estie and Ebenat Woredas

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Abstract The underlining disaster risk management practice translates the combination of knowledge, attitude, and action to maximize the effectiveness of responses against disasters. While knowledge and disaster risk management activities move along simultaneously, attitudes are inherent to individuals posing challenges to easily identify issues and then taking extended time to change. Lack of scientific wisdom on the perception of individuals towards disaster management, and the limited understanding of different factors that influence attitudes, complicates the endeavor in response to the increasingly uncertain future. This study assesses the attitudes of households for disaster risk management in the nine kebeles, the lowest administrative unit in Ethiopia, and 32 villages in Fogera, Ebenat and Estie districts (Woredas, the main administrative unit similar to county). Cross-sectional quantitative method was employed, and attitudinal survey was conducted among 412 households selected through probability simple random sampling. Purposive nonprobability sampling technique was used to identify research kebeles based on disaster prevalence, and to collect supplementary attitudinal data from 64 participants representing academia and local stakeholders. Descriptive statistics and parametric test of variance and covariance have been conducted to determine the attitude levels and to assess major factors influencing households' attitude for disaster risk management.

Results indicated that most of the households (53%) have a fairly positive attitude. Households with negative (27%) and extremely negative (20%) perception are concentrated in rural kebeles that are highly affected by recurrent disasters. Therefore, households in disaster affected areas have negative and unconstructive perception for disaster risk management. This is mainly associated with lack of active community participation and ineffective risk management activities. Households' attitude is also significantly affected by age (p = 0.0001), and within different age groups (p = 0.001), location by kebeles (p = 0.0237), education levels (p = 0.0016), education status (p = 0.004) and experience in indigenous risk management practices (p =

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0.00001). In addition, this study revealed a linear relationship within all the identified factors and households' attitude levels. Considering the situation in Ethiopia where individual perceptions are deeply rooted, coupled with the results of this study that revealed highly negative attitude among disaster affected households, it is recommended to consolidate efforts and influence attitude through maximizing community participation and enhancing the effectiveness of disaster management.

1. INTRODUCTION

The effect of disasters significantly increased across the world from time to time (Bhandari & Takahashi, 2022). Since the last two years, COVID-19 pandemic disrupted the global ecosystem and affected communities across the world through 625 million cases, 6.5 million deaths (17% in US) and over \$13 trillion total estimated economic value of loss (WHO, 2022). According to the World Bank study (2019) the Sub-Sahara region commonly experience drought, flood, landslide, and earthquake as the leading hazards, with the unique incidence of a volcano in Uganda. In Ethiopia, more than 2 million people were affected by the 2021/22 drought while inter-communal conflict affected over 5 million and further resulted in the internal displacement of 2 million people (Sheganew et.al., 2022).

Amhara region is one of the food insecure regional states in Ethiopia. According to Emewedew & Menberu (2017), there are 2.5 million people in the Amhara Region who are unable to consistently access and afford adequate food. In addition, the region is characterized by high levels of vulnerability caused by recurrent shocks allied with erratic rainfall, frequent drought, and limited access to infrastructure. South Gondar Zone and woredas including Fogera, Ebenat and Estie are prone to different types of hazards mainly flood and drought where over 12,000 people were reportedly affected during 2021 (OCHA, 2022).

In the effort to mitigate the increasing effect of disasters, the attitudes of households and communities play crucial role. Attitude reflects perception of individuals, families, communities, and organizations toward disaster risk management (DRM) that could be influenced by age, religion and belief, gender, income level and vulnerability along previous experience to disasters (Yogesh et.al., 2016). One of the commonly reported limitations in these empirical works is the challenge within communities and stakeholders on the perception of disaster (Clerveaux et al., 2010; Bhandari & Takahashi, 2022, p. 13) reported that experience and disaster memory result in a lack of a local prevention culture based on existing scientific, social, and technical knowledge, which scientific knowledge is criticized for lack of appreciating local experience and disaster memory. Likewise, Suryadi et al. (2021) indicated that communities in Lambung village, India, have attitudes measured at 69% and 31% for high

and moderate levels respectively. This study presented a chi-square test that showed a significant relationship between public knowledge and attitude for disaster preparedness.

In Africa, even though most countries showed remarkable progress in adapting useful DRM policies and establishing the knowledge base, the success of disaster mitigation interventions involves issues associated with attitudes. For instance, Kayiranga (2019) reported that 51% of the Red Cross workers in Rwanda have undesirable attitude about disaster, which is evidenced in bias, misunderstanding, and opposing conception of disaster management.

Attitude is a very important element of DRM in Ethiopia where majority of communities perceive certain hazards and the effects of disaster as an act of God. Even though studies like Sheganew et al. (2022) reported results about peoples' perception for DRM, this research lack to provide comprehensive understanding of attitude among the households who are very important actors of DRM, which these studies tend to focus on emergency workers, hospitals, and COVID-19 emergency situations.

This study contributes to addressing these content and methodological limitations. It primarily focused on households, which are the very crucial actors in disaster risk management science. The study also employed a comprehensive DRM approach, instead of hazard specific approach, and it assessed attitude and the effects of various factors within all types of hazards that the households are aware This study assesses the attitudes of households for disaster risk and management. Towards this, the study determined the attitude levels of households and then identified the different factors that influence households' attitude for disaster risk management.

2. MATERIALS AND METHODS

2.1 Study Design

This study employed quantitative method using cross-sectional design to collect, organize, analyze, and present results from disaster risk management attitude and perception survey with a focus on assessing the attitudes of households for disaster risk management, and to identify, analyze and interpret the influence of key factor affecting households' attitude.

2.2 Setting

This study was undertaken in Fogera, Ebenat and Estie woredas of South Gondar Zone, Amhara National Regional State. The Amhara National Regional State is located in the northwestern Ethiopia between 9°20' and 14°20' North latitude and 36° 20' and 40° 20' East longitude (Aynalem, 2021). South Gondar Zone covers an area of 14,607 km^2 in 11° 39' 59.99" N latitude and 38° 00' 0.00" E longitude (Akalu et al., 2009). Fogera is one of the major woredas in the South Gondar zone situated between the latitudes 11°57 and 11°59 and the longitudes

37°42 and 37°43 and altitudes ranging between 1793 to 1800 meters above sea level. (Mare et al., 2019) Woreta is the capital of the district, a town located 625 km from Addis Ababa and 55 km from the regional capital city, Bahir Dar (Gebrekidan, 2014). Ebenat is bordered on the South by Farta, on the Southwest by Fogera, on the West by Libo Kemekem, on the North by the Semien Gondar Zone, on the Northeast by the Wag Hemra Zone, on the East by North Wollo Zone, and on the Southeast by Lay Gayint (SERA, 2000). Estie woreda is located at 11°34'N, latitude, and 36°41'E, longitude and covers 132,374 km^2 area. The woreda is situated about 676 km Northwest of Addis Ababa and about 100 km North of Bahr Dar, and it is bordered on the North by the Farta Woreda, on the Southwest Gojam, on the East by Simada Woreda and on the West by Andabet and Dera woredas (Metadel et al., 2021).

Fogera has a total of 34 Kebels, amongst 29 are rural. The rural population is estimated to be around 270243 and the number of agricultural households is approximately 44000 (Hagos, 2015). The woreda is dominantly known for rice production besides maize, finger millet, tef, onion, cattle rearing and others (Tsega, 2017). Ebenat woreda is structured by 37 kebele administrations, and 35 of them are rural. The total population of the woreda is 235,091 with 93% of rural population. Among the total population, women account for 48.74% or 114, 582. (Emewedew & Menberu, 2017) About 2.2 percent of the wereda population are migrants from rural areas, and they live in urban areas of the woreda. Estie has 42 rural and 3 urban kebeles with total population of 424,041, out of which 216,329 and 207,712 are male and female respectively (CSA, 2008). The rural population size is nearly 94%. Most of the population follows the religion of Orthodox Christianity, while 2.91% are Muslims.

2.3 Study Population and Sampling Techniques

This study employed both probability and nonprobability sampling techniques. Nonprobability purposive sampling technique was used to identify the target Zone, three woredas and nine specific kebeles using prior and existing experience with disaster management as a main selection criterion. Based on this technique, the research focused on South Gondar as this zone has contextual and environmental setting to better address the research questions that are aimed at assessing attitudes of households for DRM. Using purposive sampling strategy, this study identified three woredas namely Fogera, Ebenat and Estie in South Gondar Zone. These areas have a total of 929,375 population under 116 kebeles of which 106 are rural and 10 are urban.

Employing the same purposive sampling technique, a total of nine kebeles were included through applying disaster prevalence and residential characteristics as major selection criterions. Three major criterions used were known as rural highly disaster affected, semiurban less disaster affected and urban with infrequent and normal context. Based on this, nine kebeles were identified with the total population of 62034 individuals and 10103 households as shown in Table 1 below.

Table 1. Study population by kebele

Woreda	Kebele	Criteria	Total Population	Households
Fogera	Shena	Affected, and rural	2136	348
	Woreta Zuria	Mixed, both rural and urban	3599	587
	Woreta town	Less affected, semi/urban	21222	3456
Sub-total	3		26957	4391
Este	Ziguara	Affected, and rural	1242	202
	Liwaye	Mixed, both rural and urban	608	99
	Mekane Eyesus	Less affected, semi/urban	15413	2510
Sub-total	3		17263	2811
Ebenat	Burkoch	Affected, and rural	4350	708
	Amesteya	Mixed, both rural and urban	1462	238
	Ebinat town	Less affected, semi/urban	12002	1955
Sub-total	3		17814	2901
Total	9		62034	10103

Based on probability strategies, multistage cluster sampling technique was employed to determine the number of households on which observation was made. Using household head as a sampling frame, standard population survey formula was used to determine number of households that were included in the study. The sample size was calculated by the following formula (Cochran, 1977) and it was used considering the total population more than 10,000 and significant level of variation on "P".

$$n = \frac{z^2 * p(1-p)}{d^2}$$

Where:

- n was the sample size required, expressed in number of households for the key indicator,

- z was the value of 1.96 to achieve the level of confidence of 95%,

- p was the approximate proportion of people having the positive levels of attitude for DRM. Due to lack of most recent empirical data on the attitude levels of communities towards DRM, this study assumed 40% considering other hazard specific studies that reported 40%-50% results including Sheganew et al. (2022), Kayiranga (2019) and Ashenafi et al. (2018).

- d was the tolerable error margin, as defined in 0.05 (i.e., 5% maximum discrepancy between the sample and the general population).

Based on the formula, total sample was 368.79 which was amassed into 369.

$$\frac{1.96^2 * 0.4(1-0.4)}{0.05^2}$$

- An additional 10%, which is 36, contingency was added in order to compensate possible non-respondents.

- Therefore, total of 405 household units (4%) of samples were planned to participate under the KAP quantitative study. In terms of actual, a total of 412 households participated.

- Due to lack of kebele specific attitude focused data per each woreda, the total number of sampled have been proportionally divided between the nine kebeles at the three woredas and in average 46 sampled households participated per kebele.

Using probability simple random sampling, 412 household research participants have been identified across the nine kebeles. Trained data collectors secured household list by village from the kebele administration offices, and initially marked the households in seven intervals starting from the first household on the list. The identified households have been contacted for data collection. In an event where the identified household was not available, and in a few cases where a household was not willing to provide information, the immediate next and next household have been replaced and data was collected accordingly.

2.4 Data Collection

This study employed 11 structured questions tailored to collect primary information that was used to identify the attitudes of households towards DRM. In addition, five close ended perception focused binary (yes/no) questions were used to determine the attitudes of research participants. The five close-ended binary behavioral questions were aimed at measuring the attitudes of each household for DRM, and the remaining 11 structured questions were used to identify and analyze the different factors affecting households' attitudes.

Among the five behavior and perception measurement questions, the expected response to the three questions was "No". These questions include as "disaster is Devine power or God driven", "disaster is not a worrying situation", and "prayers are effective to prevent disaster than knowledge and prevention". The two remaining questions included positive forward points like "I believe that disaster and certain hazards could be prevented or mitigated", and "I am willing to change my attitude about disasters".

Each question had equal weight of one with a total score of zero and five for minimum and maximum level per a household. The researcher prudently organized and entered the primary responses of households into spreadsheet and weighted the attitude levels of every respondent before coding the results into the STATA. The minimum score level of a respondent (zero) indicates extremely negative attitude and the maximum score (five) entail extremely positive and constructive attitude towards DRM. The mid-cut point (three) indicates fairly-positive followed by highly constructive (four) attitude for DRM. The next lowest value (one) is associated with very negative and before the full negative (two) levels of attitude for DRM.

2.5 Data Analysis

For binary indicators, two-independent sample test was employed with a Ho is that there is a statically significant difference of means between the different groups of independent variables for the households' level of attitudes toward DRM at the 95% of confidence level at the value of Pr <0.05. For the rest of categorical independent variables whose data normality assumption was checked, univariate analysis of variance and covariance was conducted using ANOVA. This analysis was also conducted for age as a continuous independent variable. The independent categorical variables tested using ANOVA and one-way ANOVA are age as a continuous independent variable, stratified age groups of households, religion, economic status of households, location of households by kebele and location of households by woreda. Following the individual level ANOVA, the multiple effects of independent variables with the dependent variable of attitude for DRM has been tested using multivariate test.

2.6 Ethical Considerations

The study considered and complied with every ethical consideration throughout the whole process including data collection, analysis, presentation, and post-research periods. At the time of collecting data, respondents and informants were provided with all necessary briefing where informed consent was obtained from households that are willing to participate. Respondents' right not to participate and/or to reject one or more questions were respected consistently. Personal information and indicators of research participants have been kept confidential. In addition, all data collected for the study is only used for the purpose of the research, that no data was provided for third party throughout all times, and all collected data will be disposed properly once this study is concluded.

3. FINDINGS

3.1 Demographic Characteristics of Attitude Survey Respondents

3.1.1 Total Number of Respondents, Gender, and Locations

A total of 412 household heads participated through quantitative data collection process using attitude survey. Amongst, 34% or 141 households were female household heads. The proportion of household participants within the target woredas has been 35% for Fogera, and 32.5% for each of Ebenat and Estie. These households were selected from nine Kebeles and 31 villages with average number of 45 and 13 respondents respectively. The smallest number of responders at kebele level was Ebenat town 01 kebele with 35 households or 8.5% share while the biggest was Ametsaya kebele in the same woreda with 13.35% share or 55 households.

In terms of village level participation, the biggest share was from Mekane Eyesus 01 kebele of Estie woreda and Giana kebele of Fogera woreda each comprising 12% or 50 households, while the smallest was recorded in Estie woreda, Ziguara kebele at Goshober and Wonberoch villages contributing two households each or 0.48%.

3.1.2 Age of Household KAP Respondents

Among total households, 97% disclosed their age. Accordingly, the mean age for these households was 40 with 20 and 76 of the minimum and maximum age ranges respectively. By woreda, the mean age was 43, 37 and 40 for Fogera, Ebenat and Estie respectively. The mean age for male households was 41, while the mean age of female households was 39. The overall age of research participants was stratified in four age categories for the purposes of data analysis. Accordingly, 13.47% and 2.24% were youths and elderly respectively, while the majority 58.35% and 25.94% were adults between the ages of 30-45, and 46-65 respectively. Both the continuous and categorical age ranges have been used in different ways as deemed by data analysis to maximize research findings. Figure 1 shows the stratified age groups of households who participated in this study.
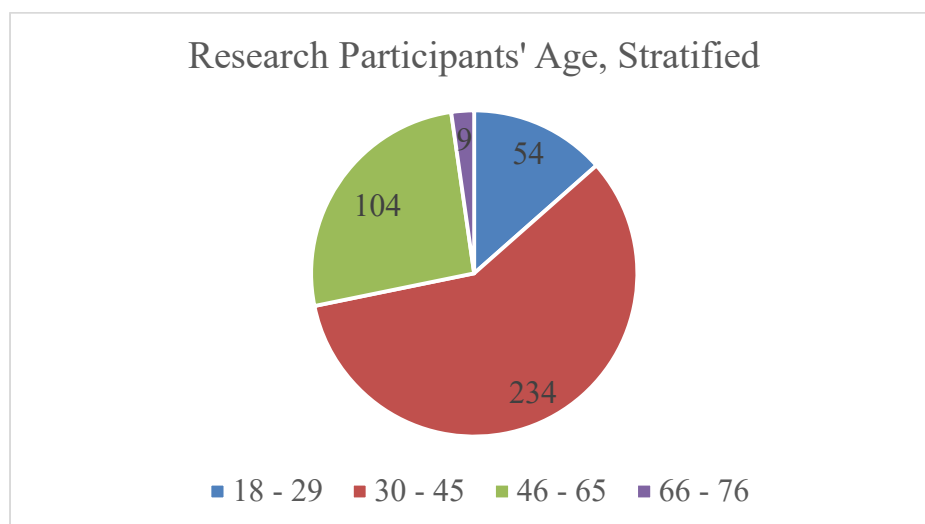

Figure 1. Research participants' stratified age groups

3.1.3 Education Level of Research Participants

Among the total, 409 households disclosed their education level. Amongst, 54.5% reported illiterate with majority of them indicating basic literacy from informal education. From this group of households, 41% are in Fogera followed by 33.5 in Estie with the lowest of 25.5% in Ebenat. Kebele wise, nearly 60% of the illiterate households are concentrated in three Kebeles mainly Amestaya of Ebenat (21%), Seha of Fogera (20%) and Liway in Estie (19%).

Likewise, 70% of the literate households are found in four Kebeles with 30% in Burkoch of Ebenat, 28% in Mekane Eyesus of Estie, 23% in Ebenat town 01 and 19% in Woreta town 01 Kebele. The number of research participants having university diploma, first degree and second

degree increases from the rural kebeles into the semirural and the urban Kebeles, which the only household with master's degree was reported in Woreta town 01 Kebele while similar areas share significant portion of literate households.

3.1.4 Religion of the Research Participants

Except two, all the research participant households reported their religion as it was one of the very important areas to understand its effect with attitudes for disaster management According to the responses, 92% of the households are Christian Orthodox followed by 7.5% Muslims and 0.5% of Christian Protestants. While the Orthodox households are dispersedly distributed across the nine Kebeles, Muslim households are concentrated in urban kebeles including Fogera, Woreta town 01 kebele (32%) and in Ebenat Burkoch kebele (23%) and again in Fogera Woreta Zuria kebele (16%). The only two households who reported Protestant Christian religion are in Ebenat town 01 kebele.

3.1.5 Economic Status of Research Participants

Research participants were asked to self-disclose their economic status through their own judgment and using local comparison among the other households. For the self-assessment of economic status, 46% households reported mid-economic status or regular with the other households in the community, 28% reported rich, 23% poor or below most of the community households and 3% very poor that indicates extremely lower economic status from the majority households in their kebeles. By kebele, almost 71% of the households who self-reported rich are found in the three kebeles of Fogera while the lowest is in Ebenat (10%) where only one kebele reported under this group. However, the majority of households who reported very poor are also from the two rural kebeles of Fogera woreda followed by Ebenat and one kebele in Estie.

Another question was asked to determine the average daily expenditure that the household could afford in maximum. This was included to improve the data trustworthiness and minimize the bias from the self-economic assessment. The question had five categories of average daily expenditure in ranges of Ethiopian Birr (ETB). According to the responses and based on the World Bank Group poverty and equity category brief (2020), 73% of households are below the international poverty line or below US1.90 income per day, 16% are lower middle with less than US3.20, 5% are upper middle economic status with more than US3.20 per day, while the remaining 6% are in the upper midlevel economic status affording more than US5.50 per day. Due to significant level of variation between households' self-economic assessment and the finding through daily income/expense assessment, this study stratified households' economic status using the international poverty line definitions as set by the World Bank Group for consecutive analysis, while both the self-assessment and stratified are used in special cases.

3.1.6 Awareness of Vulnerability and Hazards

Research participants were asked if they are aware of vulnerabilities to any hazards at their locality. According to their responses, 41% self-reported that they are aware of hazards, and

they feel that their household is vulnerable, 46% of households reported that their household is not vulnerable to any type of hazard, and the remaining 13% households do not have a certain response to their vulnerabilities. Amongst the households who are not aware of vulnerabilities, nearly half (48%) are in Ebenat woreda with majority of them in Amestaya kebele followed by Shena kebele of Fogera woreda.

3.2 Demographic Characteristics of Stakeholders

3.2.1 Academia

Even though this study primarily targeted households across the three woredas and nine kebeles, quantitative and qualitative data has been collected from key actors including academic people and the representatives of local governmental and other non-governmental organizations. The data was used to substantiate research discussions, and it was handled separately from the household data. Based on this, a total of 28 individuals from academic institutions have participated from Bahir Dar University, Debre Tabor university Woreta campus and Debre Tabor University main campus. Among the total 28, 28.5% were females, and 82% of the research participants have second degree education level.

The mean age of research participants from academia was 33, along 23 and 44 ages of the minimum and maximum bounds respectively. In average, these research participants have eight years and six months experience in the academics. Almost 90% of these research participants have experience in teaching, learning and academic research in the profession of disaster risk management, agriculture, and environmental science.

3.2.2 Other Stakeholders

Like the academia, this research involved representatives of the regional, Zonal, and Woreda level government bodies and non-governmental organizations to enrich the quality of data collected from households. Accordingly, a total of 36 individuals from these sectors have participated, and two 5.5% were females. The mean of age for these stakeholders was 39 with 27 and 56 of the minimum and maximum age bounds.

The majority were in Ebenat (30.56%), followed by Estie (27.78%), Bahir Dar (22.22%) and Fogera (19.44%). Among the total 36 participants, 22 are governmental, 10 in non-governmental organizations, and the remaining four from religious institutions representing Christian Orthodox church and Muslim. Among these research participants, 72% have technical working experience directly related with disaster risk management while the remaining 18% are engaged in managerial roles. The attitudes of these stakeholders in summarized in Figure 3 for reference and comparison understanding of differences between the stakeholder groups and the research participant households.

3.3 Households' Attitudes for Disaster Risk Management

Research participants were initially requested to self-assess their own perception and attitudes towards hazards and disaster. In this instance, research participants were asked if they believe that a positive attitude contributes for the effectiveness of DRM. For this, 33% of the households reported supporting the contribution. In addition, households were asked if they believe that a certain hazard or disaster is God or Divine power driven. For this question, 53% of households believe that hazard and disaster are driven by God, and 22% reported indifferent, making a total of 75% households sharing this perception about hazards. The contribution of this response is higher in Estie followed by Fogera, while the households who do not accept the perception increased in Ebenat.

To determine the attitude levels of households for DRM, a descriptive analysis was conducted on their responses to the five perception focused questions. According to the results of the descriptive analysis summarized in Figure 2 below, 47% of the households have responded below the mid-cut point for positive attitude towards DRM. While the majority of 38% households had a value of three, the total sum of the last highest attitude levels is 15%.
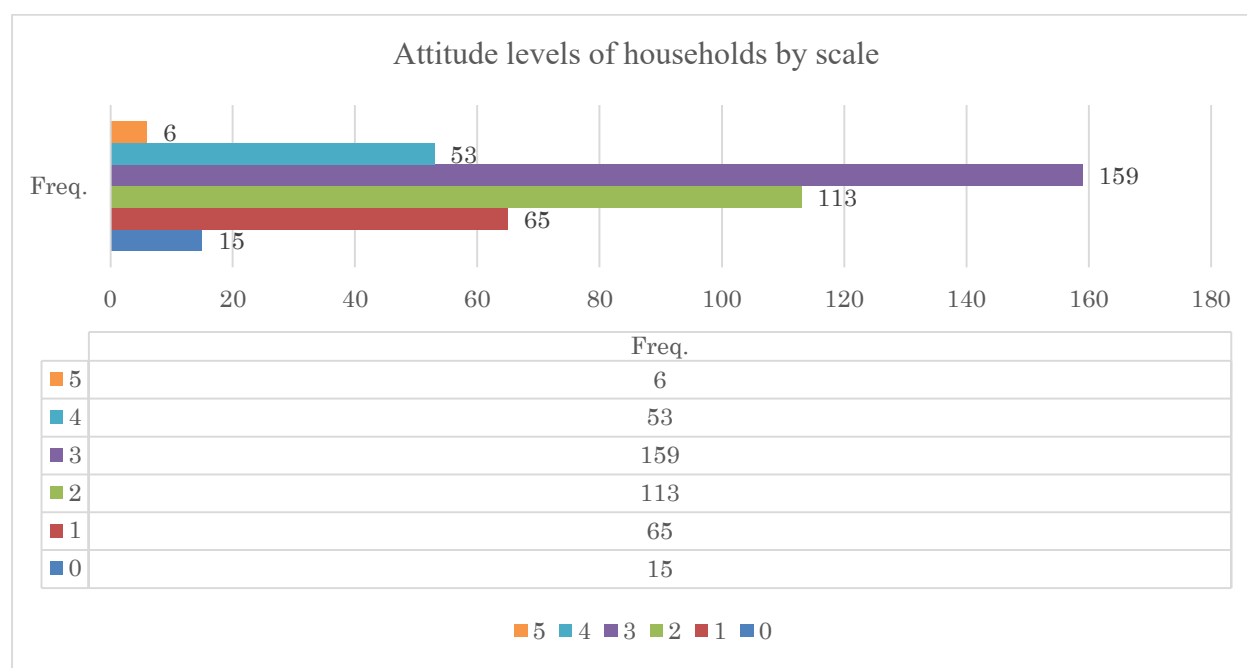

	Freq.
5	6
4	53
3	159
2	113
1	65
0	15

Figure 2. Attitude levels of households by scale

In terms of woreda level attitudes, the mean of responses from households in Estie (2.5) was slightly higher than Fogera (2.48) and then Ebenat (2.38).

Based on Table 2 for kebele mean analysis, the attitudes of households in all the three urban kebeles is high including Woreta city 01 kebele (2.91), Ebenat town 01 kebele (2.657) and then Mekane Eyesus kebele of Estie (2.653). The mean of the lowest three kebeles was reported in Burkoch of Ebenat (1.90), Woreta zuria (2.12) and Shena (2.43) kebeles of Fogera woreda.

Table 2. Mean of attitudes for DRM by Kebele

.tabulate LocationKebele, summarize (AttitudeoftheRespondent)			
	Summary of Attitude level of the respondent in 0-5 scale		
Location –Kebele	Mean	Std. Dev.	Freq.
Shena -Fogera	**2.4347826**	**1.0467341**	46
Woreta Zuria - Fogera	**2.12**	**1.451811**	50
Woreta City 01- Fogera	**2.9148936**	**1.1388359**	47
Ziguara - Estie	**2.3170732**	**.64957772**	41
Liwaye - Estie	**2.5**	**.90219371**	44
Mekane Eyesus – Estie	**2.6530612**	**1.1282549**	49
Burkoch - Ebenat	**1.9090909**	**1.0073724**	44
Amestaya - Ebenat	**2.6**	**.78410128**	55
Ebenat City 01 – Ebenat	**2.6571429**	**.90563131**	35
Total	**2.4574209**	**1.0638229**	411

Attitudes of local stakeholders for DRM

Like households, the representatives of local stakeholders have been asked to answer the same perception-focused questions. The descriptive analysis that was conducted on the responses of local stakeholders indicated that 82% have above the mid-cut point for positive attitudes and 56% have high level of constructive attitude including those 25% who have the maximum positive attitude. Among the stakeholders who have the highest level of attitude, nearly 66% are government bodies followed by non-governmental organizations.

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. tabulate OrganizationType AttitudeLevelsofStakeholders

                      Attitude level 0-5 extremely negative to
  Type of the                        positive
 organization         2         3         4         5  |    Total

    Governmental      1        11         4         6  |       22
Non-governmental Huma  1         2         4         3  |       10
Religious - Muslim    0         0         2         0  |        2
Religious - Orthodox  1         0         1         0  |        2

        Total         3        13        11         9  |       36
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Figure 3. The attitudes of stakeholder research participants

3.4 Factors Influencing Households' Attitudes for DRM

Based on the initial research hypothesis, this study aimed to assess the influence of age, gender, religion, income or economic status, and vulnerability for the attitudes of households towards DRM. Research participants including households, academia and local stakeholders were asked to identify the factors that influence attitudes. All research participants agreed with the hypothesis and selected the five factors. In addition, the research participants indicated educational status, location, and indigenous DRM practices as potential factors influencing households' attitudes toward DRM. Totally all these eight factors have been considered for analysis of their influence on households' attitude toward DRM. Age is analyzed as a continuous as well as stratified categorical independent variable. Gender, stratified education level, stratified perception of vulnerability, and stratified indigenous DRM practices are analyzed as binary categorical independent variables. Households' religion, education levels, average daily expenses, and households' self-economic assessment are analyzed as categorical independent variables.

The data normality test was conducted using Shapiro Wilk and the assumption was validated with p value of 0.15218. The two-independent sample test Ho is that there is a statically significant difference of means between the different groups of independent variables for the households' level of attitudes toward DRM at the 95% of confidence level at the value of Pr <0.05.

Two-independent sample t-test has been employed to test the relationship between binary independent variables, and the attitudes of households for DRM. Accordingly, two independent sample t-test was conducted between gender, and households' attitudes for DRM. This test indicated no significant relationship among sex/gender and attitude at $Pr(|T| > |t|) = 0.1072$). At 95% of confidence level, the Ho was rejected and there is no statistically significant difference between males and females for the attitudes toward DRM. The same test was conducted using stratified perception of vulnerabilities for the households' DRM attitude with Ho that there is a significant level of difference between the means of households having vulnerability awareness towards positive attitude for DRM at 95% of confidence level and Pr <0.05. This test suggested that there is no statistically significant different among households having different perception of vulnerabilities for their attitudes toward DRM at $Pr(|T| > |t|) = 0.3115$).

Two-independent sample t-test was conducted on stratified education status of households towards their attitude for DRM with Ho that there is statistically significant difference with 95% of confidence at Pr <0.05. The test has supported this Ho with $Pr(|T| > |t|) = 0.0237$) that there is a statistically significant level of difference between the means of literate and illiterate households towards their attitude for DRM. In analysis of the means for literate and illiterate households shown in Table 3 below, the test indicates that illiterate households have statistically higher levels of positive attitude for DRM than those reporting literate.

Table 3. Two sample t-test of attitude by stratified education levels of households

.test AttitudeoftheRespondent, by (EducationStratified)					
Two – sample t test with equal variances					
Group	Obs	Mean	Std. Err.	Std. Dev.	(95% Conf. | Interval)
Illiterate	222	2.567568	.0688377	1.025658	2.431905	2.70323
Literate	186	2.327957	.0808619	1.102809	2.168427	2.487487
Combined	408	2.458333	.0528202	1.066916	2.354499	2.562168
diff		.2396106	.1055166		.0321835	.4470376
Diff = mean(Illiterate) – mean (Literate)				t =	2.2708	
Ho: diff = 0			degrees of freedom =		406	
Ha: diff < 0		Ha: diff ! = 0		Ha: diff > 0		
Pr(T < t) = 0.9882		Pr(|T| > |t|) = 0.0237		Pr (T > t) = 0.0118		

Likewise, the same t-test was conducted on stratified households' practice for indigenous DRM practice towards their attitude for DRM with Ho that there is statistically significant difference with 95% of confidence at Pr <0.05 between those who have already indigenous practice for positive attitudes. Indigenous risk and disaster management refers to the community owned, informal and traditional practices that are used to predict, prevent and mitigate shocks. The test has supported the Ho with Pr (|T| > |t|) = 0.0016) that there is a statistically significant level of difference between the means of households who have indigenous DRM practice and others who do not have this practice towards their attitude for DRM.

Based on this test, households who have indigenous disaster risk management practices at their communities have higher level of positive attitudes for DRM that the other households who do not have any type of indigenous practices at community levels. This is statistically significant at Pr(|T|> |t|) = 0.0016), and the difference in the means of households who have the practice that is higher than the households who do not have that practice in 0.33 for every one single household.

For the rest of categorical independent variables whose data normality assumption was checked, univariate analysis of variance and covariance was conducted using ANOVA. This analysis was also conducted for age as a continuous independent variable. The independent variables tested using ANOVA and one-way ANOVA are age as a continuous independent variable, stratified age groups of households, religion, economic status of households, location of households by kebele and location of households by woreda.

For each of the independent variable under analysis, the data normality test was checked using Shapiro -Wilk test and the homogeneity of variance using Levene's test, which there was some level of non-normality for a few independent variables including age as a continuous variable and location by kebele, each with p value of 0.001. However, the test was conducted considering the situation where both independent variables were tested twice using age as a continuous variable and also age stratified in four groups, and location in woreda and kebele. In addition, the rest of assumptions were checked that the dependent variable of attitude for DRM is measures at the continuous level, each independent variable consisted of two to more categorical unrelated groups, the independence of observations has been respected as there was no relationship between the observations of each and between the groups as the analysis was made one-by-one, and there is no major and significantly different outliers of data. Based on these assumptions, the one way and ANOVA test findings are summarized below for each independent variable.

The first analysis used age of households as a continuous variable, and then age ranges of households in four categories. The ANOVA test allows to analyze continuous independent variables if the variable is entered after checking "C" command on data entry window. The test was conducted with a Ho that there is no significant difference between age and attitudes of households for DRM at 95% of confidence level with p value of $P<0.05$, and H1 that the null hypothesis is not true or there is significant difference between age and attitude of DRM.

As seen on the Table 4 below, ANOVA test was conducted to test the influence of age as a continuous variable. The finding suggested a significant level of difference between age of households and their attitudes for DRM at p value of 0.0001. This is sufficient to reject Ho and accept H1.

Table 4. ANOVA to the attitude of households for DRM by age

.anova AttitudeoftheRespondentAge					
Numberofobs =	**400**		R-squared		= 0.2291
RootMSE =	**.995119**		Adj R-squared		= 0.1211
Source	PartialSS	df	MS	F	Prob>F
Model	102.986	49	2.1017551	2.12	0.0001
Age	102.986	49	2.1017551	2.12	0.0001
Residual	346.5915	350	0.99026143		
Total	449.5775	399	1.1267607		

But this test does not provide the actual level of difference on age and the influence for DRM attitude among households. Therefore, one-way ANOVA was important using the stratified age groups to test the relationship of households within each age range for their attitudes toward DRM.

Therefore, a one-way ANOVA was conducted to determine if the age groups of households within the group was significant for attitudes toward DRM. Research participant households were classified into four age groups including 18-29 (n = 54), 30-45 (n = 233), 46-65 (n = 104) and 66-76 (n = 9). Assumptions were checked and no violations observed. The ANOVA analysis indicated that there is a statistically significant difference in age between the groups as determined by one-way ANOVA (F (3, 396) = 7.53, p = 0.00001). The finding also showed that the mean of attitudes for DRM is highest at 3.44 for households in the 66-76 age group followed by 46-65 with mean of 2.63, while the young age group 18-29 has the lowest mean of 1.98.

A post-hoc test using Bonferroni revealed that attitude for DRM was significantly different in the age groups of 18-29 compared to 30-45 (0.46, p = 0.012), 18-29 compared to 46-65 (0.65, p = 0.001), and 18-29 compared to 66-76 (1.46, p = 0.001). However, there is no statistically significant difference in attitude between age groups of 46-65 compared to 66-76 (0.80, p = 0.15), and age groups of 30-45 compared to the age groups of 46-65 (0.16, p = 1.0).

A similar one-way ANOVA was conducted to determine if the religion, economic status, the average daily expense, and location by woreda are separately significant within groups for the attitudes of households towards DRM. This test underlined a Ho that there is no significant difference between religion, economic status, the average daily expense and location of households by woreda for their attitudes toward DRM at 95% of confidence level with p value of P<0.05, along the H1 that the null hypothesis is not true or there is significant difference between religion groups, economic statues, average daily expense and the three woredas within the group for the attitude of households toward DRM.

Research participant households were classified along their respective responses to the categories, and assumptions were checked. The test has indicated that there is no statistically significant difference within religion groups, the economic status of households, the average daily expense of households and the location of households by woreda as determined by ANOVA separately with p value of F = 0.34, p = 0.7148, F = 1.16, p = 0.3291, F-1.24, p = 0.2915, and F = 0.43, p = 0.6503 respectively. Therefore, the null hypothesis of no difference within groups of households' religion, economic status, average daily expense, and the location by woreda has been accepted.

In addition, a one-way ANOVA was conducted to determine if the location of households by kebeles is significant within the group for attitudes toward DRM. Research participant households were classified in their nine kebeles Shena (n = 46), Woreta zuria (n = 50), Woreta town 01 (n = 47), Ziguara (n = 41), Liwaye (n = 44), Mekane Eyesus 01 (n = 49), Burkoch (n = 44), Amestaya (n = 55) and Ebenat town 01 (n = 35). Assumptions were checked and no

violations observed. The analysis indicated that there is a statistically significant difference in kebeles between groups for household' attitude toward DRM as determined by one-way ANOVA (F (8, 402) = 3.98, p = 0.00001).

A post-hoc test using Bonferroni indicated that attitude is significantly different along kebele of households in Woreta Zuria compared to Woreta town 01 kebele (7.94, p = 0.006), Woreta town 01 kebele compared to Burkoch (-1, p = 0.000), Mekane Eyesus compared to Burkoch (-0.74, p = 0.021), Burkoch compared to Amestaya (0.69, p = 0.038) and Burkoch compared to Ebenat town 01 kebele (0.74, p = 0.055).

The final one-way ANOVA was tested to determine if the education levels of households is significant within the group for attitudes toward DRM. Research participant households were classified in their five categories none-basic (n = 222), 12 grade completed (n = 36), diploma graduate (n = 67), first degree graduate (n = 82), and master's degree graduate (n = 1). The education level of none-basic refers to illiterate households who did not attend any formal education and those who can only tell numbers from informal education. The 12-grade complete is households who reported that they have attended formal education and completed until 12 grades. The Diploma graduates are households who completed additional college and technic vocational education equivalent of diploma degree. First degree education level refers to households who have attained bachelor's degree from recognized institution in any field. The master's degree education level refers to the second-degree and specialization attained from recognized institutions in any field. Assumptions were checked and no violations observed, except the test for data equal variance that is mainly due to the significant education level variation of research participants. Accordingly, the analysis indicated that there is a statistically significant difference in education levels of households within the groups for attitude toward DRM as determined by one-way ANOVA (F (4, 403) = 5.18, p = 0.0004).

The post-hoc test using Bonferroni indicated that education level of households was significantly different among non-basic levels compared to diploma graduates (-0.59 p = 0.001), and diploma graduates compared to first degree graduates (0.61, p = 0.004).

Following the individual level ANOVA, the multiple effects of independent variables with the dependent variable of attitude for DRM has been tested using multivariate test. The independent variables include location by woreda, location by kebele, age range, religion, education levels, economic status of households and average daily expenditure of households. The ANOVA test confirmed that the model has statistically significant differences with f = 2.94 and p value of 0.000. However, the individual difference is not statistically significant with economic status, location by woreda and religion of households as shown on the Table 5 below.

Table 5. Attitudes of households by multivariate variables

.anova AttitudeoftheRespondent LocationWoreda LocationKebele Age Range Religion					
Number of obs = 384			R-squared = 0.1703		
Root MSE = 1.00894			Adj R-squared = 0.1124		
Source	PartialSS	df	MS	F	Prob>F
Model	74.818476	25	2.9927391	2.94	**0.0000**
LocationW~a	5.1738617	2	2.5869308	2.54	0.0802
LocationK~e	29.204788	6	4.8674646	4.78	**0.0001**
AgeRange	11.447126	3	3.8157088	3.75	**0.0113**
Religion	0.14305163	2	0.07152581	0.07	0.9322
Education	13.42583	4	3.3564574	3.30	**0.0113**
EconomicS~s	4.3879771	4	1.0969943	1.08	0.3673
Averageda~e	7.9327338	4	1.9831835	1.95	0.1020
Residual	364.42892	358	1.0179579		
Total	439.2474	383	1.14686		

4. DISCUSSION

4.1 Attitude for Disaster Risk Management and Factors Influencing Household Attitude

4.1.1 The Attitudes of Households for DRM

Several authors have used different techniques to determine the attitude levels of various key actors most of these focusing on health workers, social workers, and disaster responders. For instance, Bhandari and Takahashi, (2022) used immigrants in Japan to rate their concern on various disasters through a five-point Likert scale ranging from "not concerned at all" to "highly concerned" providing a cumulative score from 0 to 40. This study indicated that the Nepalis immigrants in Japan have an overall positive attitude towards certain hazards and disaster preparedness.

Likewise, Shanableh et al. (2023) applied a sixteen-point Likert scale questions with responses starting from 'strongly agree' to 'strongly disagree' to determine the attitudes of health workers for DRM. The overall measurement points had the range from 16 to 80 points, and attitude levels were grouped along the score levels of research participants for scores < 42 as low, 42–56 points as moderate, and then > 56 high attitude. Based on the descriptive analysis, the study determined the median score of attitudes was 57, 55, 64, 64 and 60 for pharmacists, physicians, dentists, nurses, and for others respectively. Based on this, all the health workers have an overall positive level of attitudes for DRM with a comparatively higher level of attitudes among dentists and nurses, followed by other group of health workers with the lowest level of attitudes attitude scored by the physicians.

Using the analytic observational study, Suryadi et al. (2021) determined the relationship between community knowledge and disaster preparedness attitudes at community level in Indonesia. Based on this study, the attitude of the communities was identified as moderate

(69.0%) followed by a middle level (31.0%). In Rwanda, only 54% and 51% of Red Cross workers were reported having the mid level of attitude for DRM using a cross sectional study (Kayiranga, 2019). This finding has a comparative similarity with the available studies in Ethiopia. For instance, Ashenafi et al. (2018), reported that nearly 65% of health care workers in Tikur Anbesa Hospital, Addis Ababa, have favorable attitude for DRM. This implies that not less than 35% of health workers have negative and biased perception towards DRM. These works support the findings under this article where 20% of the households have extremely negative attitudes and totally around 47.5% of the households in the three woredas share biased and unfavorable perceptions.

The indicators for negative attitudes include perception about hazards, willingness to participate in DRM activities and readiness to identify response actions. In this regard, the Nepal Earthquake Preparedness for Safer Communities (NEPSC) (2013) KAP survey revealed that most people in Kathmandu valley were able to agree that causes for hazards are not a punishment of God. This was seen as one of the good indicators for attitudes. The research participants of this study were similarly asked this question, but 54% of the respondents perceive disaster as an act of God as seen in Table 6 below.

Table 6. Descriptive summary of response on disaster is an act of God by woreda

Woreda	Some believe disaster as an act of God, do you?			
	Yes, it is	No, it isn't	I don't k	**Total**
Fogera	65	14	55	**134**
Ebenat	69	47	18	**134**
Estie	81	39	14	**134**
Total	**215**	**100**	**87**	**402**

4.1.2 Factors Influencing Attitudes for Disaster Risk Management

Age and the age groups

The results of this study indicated that households within the 66 – 76 and 46 – 65, have positive attitude and perceptions for DRM than youth aged 18-29, and adults between 30 – 45 ages. This implies that a positive attitude for DRM increases as age does. According to Fatmah (2022), older people with good attitudes are those who are ready to deal with disasters based on good knowledge of the signs of disaster, making them always ready to evacuate at any time. Shanableh et al. (2023) reported that age group has no statistically significant differences for DRM attitudes among health works. But this study has found that the median of DRM attitudes was higher among people aged 50 years and over (#64) compared to those between 26 – 50 (#58), and those under 26 years (#63).

Sex/Gender

This study applied two independent sample t-test between gender, and households' attitudes for DRM. The finding revealed no statistically significant difference between the male and female households for the attitudes toward DRM. It is generally believed that women consider disaster events and threats as a more serious and riskier situation. They are also more involved in disaster mitigation and preparedness activities than men. But the finding of Shanableh et al. (2023) on the disaster risk management knowledge and attitudes of health workers in the Emirates indicated that the median of females for total attitude score was below (56) than the males (61). This study also reported a statistically significant difference between males and females on the total attitude score (p = 0.008). This study has a similar finding with above researchers, which the overall attitudes of male (n = 270, mean = 2.51m SD ± 1.02) households was slightly higher than the females (n = 141, mean 2.34, SD ± 1.13).

Location by woreda

The attitude difference within the households of three woredas has been tested to better understand the contextual and disaster experience effects on the perception for DRM. Among the three woredas, Fogera is regarded as prevalent to disasters followed by Ebenat and then Estite that has less recurrent effect of disaster (DPPC, 2012). The analysis indicated that no statistically significant difference among the attitudes of households in these woreda for DRM.

Meanwhile, the descriptive analysis on the attitude levels of households indicates that the overall mean of households is higher in Estie (2.5) followed by Fogera (2.48) and then Ebenat (2.38). The woredas identified by this study have been purposively selected as highly prone to hazards (Fogera), mid-level disaster affected (Ebenat) and low prevalent (Estie). The attitude levels are highly positive in the woreda that is less affected by disaster. The highly disaster prone woreda has fairly-positive attitudes followed by the low level of attitudes in the woreda that has mid-level of disaster prevalence.

Location by kebele

In a descriptive analysis, the mean of DRM attitudes among households is higher in the three urban-kebeles with the highest in Woreta town 01 (2.91), followed by Ebenat town 01 (2.657) and then Mekane Eyesus (2.653). The mean difference between the last two kebeles is very low. This indicates that the attitude for DRM is higher in households at less disaster affected and urban kebeles that affected rural and semi-urban areas.

The mean analysis of attitudes within these kebeles indicates that the highest positive attitude for DRM is in the urban and less-disaster affected, which the top three highest attitudes are all urban kebeles. The fairly-positive attitude for DRM is in semi-urban kebeles with an exception to Ziguara kebele in Estie woreda. The negative/lower level of attitudes are in the rural and disaster affected kebeles with an exception to Woreta Zuria kebele in Fogera. Therefore, the positive attitude for DRM increases from rural and disaster affected areas into the semi-urban and moderately disaster affected then the highly positive attitude in the urban and less disaster

affected areas. In this regard, the attitude is more influenced by access to information and the environment to urban system, than disaster prevalence nor exposure to certain hazards.

This finding contradicts with the empirical findings of other studies that indicated the increase of positive attitude among disaster prone areas than others who are less affected. In this regard, Teja (2021) indicated that knowledge of flood preparedness influences the attitude and attention of the community, especially people who live in areas prone areas. This is mainly associated to the situation that disaster affected communities have stronger engagement within DRM, which will contribute to improve perception for DRM.

However, this study opposes the linear relation between attitude and disaster prevalence, rather suggests that disaster affected areas have developed more negative attitudes for DRM than others, and this is mainly associated to lack of effective response and limited participation of households in DRM. The more the communities and households are affected by hazards that are not timely forecasted, properly prevented and mitigated, the more the communities develop biased and unfavorable perception towards disaster risk management. As the prevention, mitigation and response activities are not successfully supporting these communities to cop-up with shocks, they are developing negative impressions that was manifested by their response as disaster is an act of God, and a belief that hazards could not be forecasted, prevented, and mitigated. In addition, attitude is more influenced by access to information and the environment to urban system, than disaster prevalence nor exposure to certain hazards.

Religion

Religion is a major factor that influence attitude and perception among the communities and households in countries like Ethiopia. The difference between the beliefs along spiritual thoughts and the scientific wisdom has often posed serious level of challenges in Ethiopia. This study tested the differences between the religion groups of research participants that incorporated the majorities of Orthodox Christians, followed by Muslims and then Protestant Christians, for their attitude towards DRM. The analysis revealed no statistically significant difference between these groups of religions and households' attitude levels for DRM. But this finding is highly subject to the effect of data non-normality and variance. This is mainly because nearly 92% of the research participants are Orthodox Christians. In a descriptive analysis of the means of the different religions towards their attitudes for DRM, the results presented in Table 7 indicated that the attitude of Orthodox Christians is positive than the Muslims, and then the lowest being the Protestant Christians.

As shown in Table 8 below, households were asked if they believe a disaster or certain hazard is God driven, and the responses of households who believe that disaster as an act of God was 52% for Orthodox Christians, 67% for Muslims and 100% for Protestant Christians despite the fewer number of representations.

Table 7. Attitude levels of households by religion

.tabulate of Religion, summarize (AttitudeoftheRespondent)

Religion	Summary of Attitude level of the respondent in 0 – 5 scale		
	Mean	Std. Dev.	Freq.
Orthodox	2.4654255	1.0501435	376
Muslim	2.3548387	1.2792807	31
Protestant	2	0	2
Total	2.4547677	1.065747	409

Table 8. Disaster is an act of God by religion

.tabulate of Religion DisasterIsGodAct

Religion	Some believe disaster as an act of God, do you?			
	Yes, it is	No, it isn't	I don't k	Freq.
Orthodox	191	98	79	368
Muslim	20	2	8	30
Protestant	2	0	0	2
Total	213	100	87	400

Even though the number of respondents in Protestant religion is very low, it indicates the potential negative attitudes for DRM than Muslims and Orthodox Christians. This can be due to the spiritual thoughts and more of the personal perceptions within the two research participants. Therefore, more study might be important to further understand this situation.

Economic status and the average daily expenditure

This study used two ways of assessing the influence of economic status for DRM attitudes among the households. The first one was a self-assessment of economic status as perceived by the households themselves, and included four categories of very poor, poor, regular or middle class and rich. Due to the subjective nature of this self-assessment, the households were also

asked another question that would help to inform their actual economic status through knowing the average maximum daily expenditure they can afford to the household. This was grouped in five categories per the IOM classification of economic status including 1 – 50 ETB, 51 – 150 ETB, 151 – 300 ETB, 301 – 5000ETB and more than 500 ETB. One-way ANOVA test was conducted separately for each of the economic status indicators. Based on the tests, it was indicated that the relationship between economic status and DRM attitude have no statistically significant differences for both indicators.

However, a descriptive analysis of means indicated that the attitude levels of the households vary by their economic status. Using the households' self-economic assessment, the households who are rich have the highest positive attitude for DRM (n = 111, mean = 2.58, SD ± 1.11), followed by the regular (n = 184, mean = 2.41, SD ± 0.97), and the lowest negative attitude with the poor and very poor households at almost equal mean (n = 14, mean = 2.35, SD ± 1.15) and (n = 92, mean = 2.34, SD ± 1.18) respectively.

Using the average daily expenditure of household, the households who can afford the highest amount of expenditure have the very negative level of attitudes for DRM (n = 23, mean = 2.21, SD ± 1.27). The households who afford the higher mid-class expenditure have the extremely positive levels of attitude for DRM (n = 19, mean = 2.73, SD ± 0.93). The next level of positive attitude is among the households who afford the lowest amount of daily expenditure (n = 155, mean = 2.43, SD ± 1.03). This indicates that the households who have positive perception about their economic status have also a positive attitude for DRM.

Therefore, the households who have higher income and stable economic status have extremely negative attitude for DRM. The households within regular and mid-class economic status have of the highest positive attitude for DRM. Households who have low economic status and below the average mid-class income have moderate or fairly-positive attitude for DRM as shown in Figure 4 below.
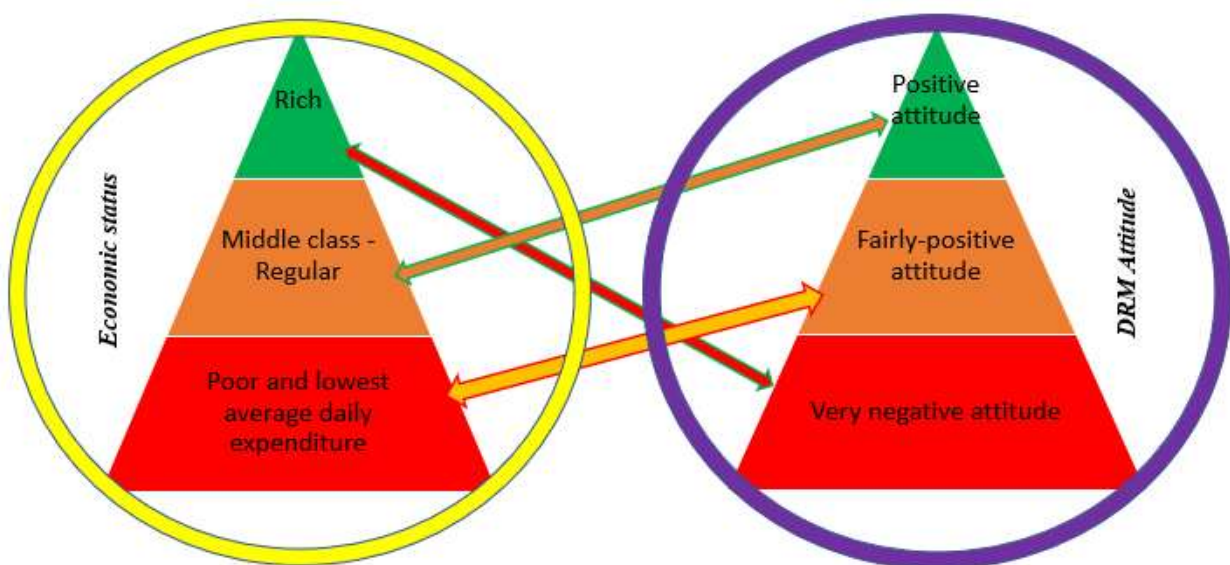

Figure 4. The relationship between economic status and attitude for DRM

Education status

The attitude mean analysis indicated that the mean of DRM attitude is very positive among the households who have higher education level mainly those who are masters' degree graduate (n = 1, mean = 4). Nonetheless, this trend does not follow the next education levels where diploma graduates have the lowest and very negative attitude for DRM (n = 67, mean = 1.97, SD ± 0.92) followed by the 12 grade completed households (n = 36, mean = 2.36, SD ± 1.04). As this support the two-independent sample test finding, the illiterate households who only have basic literacy and numeracy levels have fairly-positive attitude (n = 222, mean = 2.56, SD ± 1.02) that is nearly equivalent to the first-degree graduates (n = 82, mean = 2.58, SD ± 1.18), and significantly higher than 12 grade complete and diploma graduate households. This is shown in Figure 5 below.
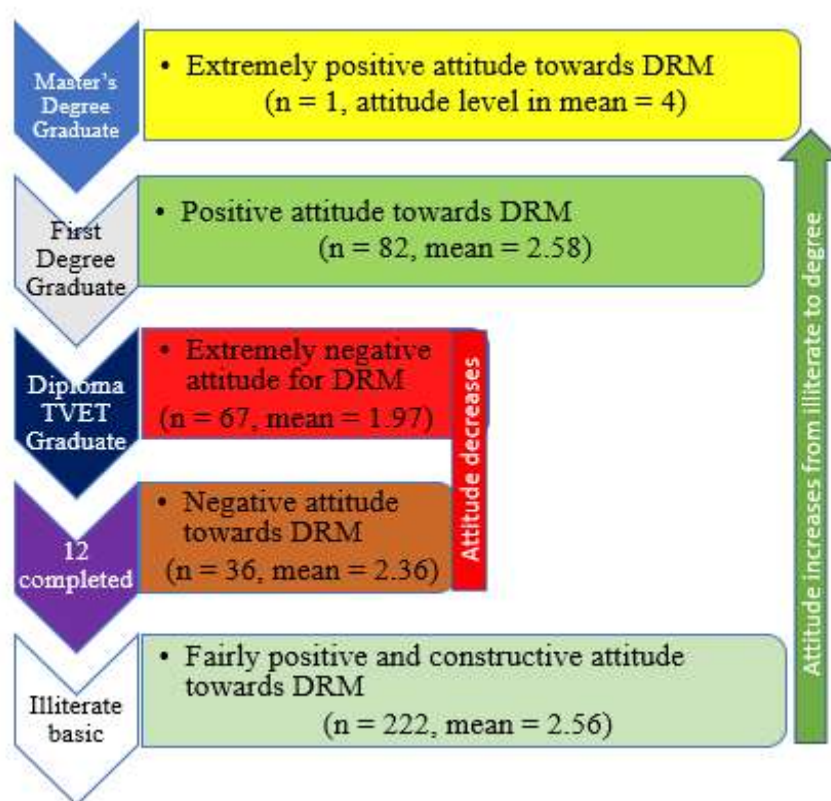

Figure 5. Attitude by education level of households

Based on the actual means of attitude survey, households who reported diploma graduate have negative attitude for DRM. The households who completed grade levels up to 12th have relatively positive attitude for DRM but still below the satisfactory levels. Illiterate households with basic literacy and first-degree graduate households have a fairly-positive attitude, while the masters' degree graduate was able to demonstrate very high level of attitude for DRM.

The findings of this study regarding the relationship between education level and attitude differs from other empirical works. This is mainly because this study found that households

with low educational background and those who are illiterate have more constructive attitude towards DRM than others who are literate. For instance, among the total households who are grade 12 completed, 2% only oppose the notion that disaster is an act of God. In the other hand, 24% of illiterate households oppose the same notion followed by 27% of households with first degree education level and then 28% of the diploma graduate households. In support of this, Mostafizur et al. (2023) measured the associating factors for attitude among social workers involved in COVID-19 response and found that attitude levels of social workers significantly vary according to their educational attainment and experience.

Awareness of vulnerability and risk information

The perception and awareness analysis indicated that there is no significant difference among households who have vulnerability awareness and others who do not have this information toward their attitude for DRM. This is another finding that matches with the findings of location by woreda and kebele. Even though households in hazard prone areas like rural kebeles of Fogera and Ebenat were supposed to have higher level of positive attitudes for DRM, it was found that other kebeles that are less prone to disaster have that kind of attitude. Therefore, awareness of vulnerability and specific hazards around the communities has no linear relationship with the attitudes for DRM among the households at the three woredas and nine kebeles of this research.

Indigenous DRM practices

The analysis on the households' practice for indigenous DRM practice and attitudes for DRM was aimed to determine if there is a statistical difference between households who have indigenous practice and others who do not any indigenous practice toward the overall attitude for DRM. The analysis found a statistically significant level of difference, and the mean comparison revealed that the mean of households who have indigenous DRM practice is higher than households who do not have any local DRM practices. Therefore, households who have indigenous disaster risk management practices at their communities have higher level of positive attitudes for DRM than the other households who do not have any type of indigenous practices at community levels.

This result enables to understand that households' attitude for DRM is more affected by practice than awareness of vulnerability, risk information or exposure to hazards by location. The household attitude has no statistical difference between perception of vulnerabilities as well as the prevalence of disasters by both woreda and kebeles. Regardless of the adverse effects, indigenous and cultural DRM practices within the target households have positive contribution for attitudes.

4.1.3 The relationship between the factors and attitudes for DRM

Several researchers have associated different factors with attitudes for DRM. The relationship within all independent variables and the outcome variable of attitude is relevant to understand the cumulative effect of more than one factors to the outcome. This is important to enhance scientific wisdom beyond individual interactions. According to Bhandari and Takahashi (2022), sex and source of information are strongly associated with the attitude of Nepalese immigrants residing in Japan towards natural disaster preparedness. In related with factors influencing attitudes for disaster risk management, Fatmah (2022) found that age group, gender, having vulnerable people in the home, educational attainment, and experience as significant factors for attitude among COVID-19 social workers in Bangladesh.

This study identified that location by woreda and kebele, age range, religion, education levels, economic status of households and average daily expenditure of households have combined effect as a model, and they have a statistically significant difference toward DRM attitude among households. However, the individual difference is not statistically significant within economic status, location by woreda and religion of households for the DRM attitude. Therefore, economic status, woreda as a location and religion are not good predicators for the DRM attitude of households.

5. CONCLUSION

Attitude is an essential component of disaster and risk management. It informs action among the key actors, mainly communities and households. Based on a descriptive analysis of households' response for behavioral and perception focused structured questions, substantial number of households have positive attitude for DRM. The attitude of household for DRM is high in Estei followed by Fogera and then Ebenat. By kebele, attitude is positive in Woreta town 01, Ebenat town 01 and Mekane Eyesus kebeles, which are all urban and disaster less affected kebeles. In the contrary DRM attitude is very negative in Burkoch, Woreta Zuriya, and Shene kebeles, which are rural and semiurban with higher disaster prevalence. The last two kebeles were from Fogera that are highly prone to disaster whereby households had increased opportunities to involve in risk management activities.

Therefore, the attitude of households for disaster risk management is not influenced by hazard and risk information, and the exposure to recurrent disasters. It is more associated with access to reliable information, and residential status where urban areas have increasingly positive attitude. Moreover, households affected by disasters have developed negative and unfavorable attitude for DRM. This could be due to severe impacts of the previous disasters and lack of active participation among the households within disaster and risk management activities.

In addition, the attitudes of households for DRM are statistically different among the age of households, education levels, and experience in indigenous practices. Positive attitude for DRM increases among elders than adults, and the youth have the very negative level of attitudes. Therefore, positive attitude increases as age does. This is mainly because attitude is supported by personal experience and informative learning than formal education. Likewise, the DRM attitude is positive among illiterate households, and it increases from grade level to university graduates.

In terms of DRM indigenous practices, households who have the local and community owned risk management activities have positive attitudes than those who do not have any of the similar practices. Therefore, indigenous practices are positive factors to influence attitude.

The combined effect of age, gender, location by woreda and kebeles, education levels, economic status, awareness of vulnerability and experience of indigenous DRM practices is significantly different for households' attitude for DRM. Thus, more research and action are required to better understand this relation. However, location by woreda, religion, education levels and economic status are not good indicators of households' attitude separately. Nonetheless, the difference within religion and DRM attitudes requires further research as the data of non-normality was a major concern.

6. RECOMMENDATIONS

The attitudes of households towards disaster risk management can be characterized as positive, and the households across the three woredas and nine kebele have a fairly positive perception of DRM. The actual attitude of households in the three woredas is within the similar levels without significant levels of difference by woreda. However, attitude is consistently high in urban and disaster-less affected kebeles than rural and semi-urban kebeles that are highly prevalent to disaster. It is likely that disaster affected communities have developed negative attitude for DRM. This is mainly associated with poor level of disaster response activities and lack of community participation within the DRM practices.

In countries like Ethiopia, changes in attitude and perception are hardly realized through awareness creation nor formal and informal education. But attitudes of households can be strongly influenced by action. This is the supported by the finding that households who have local and informal indigenous DRM practices have more positive attitude for DRM than others who do not have any local practices. The effects of these indigenous DRM activities on households' attitude have positively influenced the households' attitude. Therefore, instead of working directly on actions that are aimed at changing households' attitude through awareness creation and information dissemination, it is recommended to leverage practice and positively influence attitude. As result, separate, and individually intentional actions aimed at influencing attitude are not recommended, but to maximize community participation in DRM practice and

to showcase the successes of DRM responses. This eventually influences the current lower levels of households' attitudes for DRM constructively.

Actions aimed at influencing positive attitudes should focus the young age groups mainly those aged within 18 - 29, and 30 - 45. The same efforts should target households who are grade level complete and graduates of diploma and TVET. Positive attitude is higher in urban areas, therefore using practice to inform attitude should consolidate actions towards rural and semi-urban areas mainly in Burkaoch, and the kebeles in Fogera. he situation where Fogera has the lowest level of attitudes poses an evident need among the relevant actors to understand this situation and initiate appropriate actions. Indigenous DRM practices positively influence attitudes. Therefore, experience sharing, documenting, and scaling such best practices could work well to strength locally owned DRM practices and to positively influence attitudes of households in Fogera.

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Disclaimer

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