

*Original Paper*

# Health Literacy and Some Socio-Demographic Aspects under One Health Approach in Eastern Tanzania: Connections and Realities

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## **Abstract**

*Health Literacy significantly contributes towards attaining good health particularly when taken into the context of the interface of humans, animals and the environment. This cross-sectional study assessed health literacy and its connections to other socio-demographic aspects under One Health Approach in Morogoro municipality and Mvomero districts in Tanzania. A structured questionnaire administered through a Computer Aided Personal Interviewing (CAPI) electronic platform was used to collect data from 240 respondents obtained through a multistage sampling procedure. Health Literacy was assessed using context specific assessment tool. IBM-SPSS v20 and Gretl software were used to analyze data. The results revealed Inadequate Health Literacy at 36.3%, Moderate Health Literacy at 30.8% and Adequate Health Literacy standing at 32.9%. There was no association between educational attainment and the level of Health Literacy revealed. Health Literacy was lower among older individuals, with 40.2% of those who had Inadequate Health Literacy were from the elderly age category, more females (56.3%) had Inadequate Health Literacy than males (43.7%), Adequate Health Literacy was observed among married respondents at 65.8% in the category. Health literacy varies across some socio-demographic aspects. It therefore remains imperative that interventions in scale up health literacy by various stakeholders to consider these socio-demographic aspects.*

## **Keywords**

*health literacy, socio-demographic aspects, health behaviour, one health approach, Tanzania*

## 1. Introduction

### 1.1 Background Information and Problem Statement

There is an obvious contribution Health Literacy (HL) is reported to have towards attaining good health (Paasche-Orlow & Wolf, 2007; Muhanga & Malungo, 2017a). Literature (Weiss, Hart, McGee, & D'Estelle, 1992; Parker, Baker, Williams, & Nurss, 1995; Baker et al., 1996; Ratzan & Parker, 2000; Gazmararian, Williams, Peel, & Baker, 2003; Berkman et al., 2004; Dewalt, Berkman, Sheridan, Lohr, & Pignone, 2004; Nielsen-Bohlman, Panzer, & Kindig, 2004; Sudore et al., 2006; AHRQ, 2007; Paasche-Orlow & Wolf, 2007; TARSC, 2009; WHO, 2009; Berkman, Davis, & McCormack, 2010) document a number of ways in which health literacy impacts health; including how it predicts health outcomes, impacts on health care costs and utilization, and when it is limited how it impacts negatively a person's ability to access and use health care, to interact with providers, and to care for oneself. This is due to the fact that HL has to do with efforts on enhancing people's access to health information and the capacity to effectively use such information in health and related aspects (Muhanga & Malungo, 2017a; Muhanga & Malungo, 2018).

The world has of recently increasingly registered incidences which have consequently led to transmission of infectious diseases emanating from livestock production, intensive animal production practices, exploitation of wildlife, wildlife trade, increasing contact of wildlife and livestock, and environmental degradation (Jones et al., 2008; Kayunze et al., 2012; Mumba, Squarre, Mwase, Yabe, & Shibahara, 2014). Due to these incidences it is apparent that for good health to be attained, HL has to be taken into the context that recognizes the existence of an inextricable link between human, animal and environmental health. Based on that, it is now being considered imperative for veterinarians, human health and professionals in some other related sectors to collaborate closely at the same time a high level of HL under One Health Approach encouraged among people towards maintaining good health. Numerous studies have measured HL (Baker et al., 2002; Gazmararian et al., 2003; Wolf, Feinglass, Thompson, & Baker, 2010; Edwards et al., 2012; Sorensen et al., 2012; Sun et al., 2013; Sørensen et al., 2015); though, most of these studies have been conducted on developed world; and very limited carried out in the developing world (Stone et al., 2011). It should however be noted that none of these studies have taken into consideration the reality that optimal health for animals, humans and the environment will only be achieved after having in place collaborative working efforts between humans, animals and the environmental professionals. Attainment of optimal health for animals, humans and the environment also requires understanding on how humans, animals and the environment interact plus the kind of consequences brought forth from such interactions on health. Substantial evidence exists in Tanzania on having HL scantily researched and documented. Very few empirical studies on HL have been conducted in Tanzania, for example Stone et al. (2011); a study on evaluation of the effectiveness of Information, Education and Communication (IEC) materials for enhancing patient HL plus their perception on the IEC materials on HIV/AIDS. Despite of availability of such few studies on HL in Tanzania, none of the very few studies located have concentrated on OHEA.

Evidently, the government of Tanzania has since time immemorial put a lot of efforts aiming at bettering health services and educating people to enhance their HL, i.e., these efforts included, upgrading knowledge and skills needed for accessing, understanding and using HI, which could lead to healthier lifestyle choices to attain positive health outcomes for humans and animals respectively (URT, 2003a), despite such efforts by the government, Health Impairing Behaviours (HIBs) have been observed to proliferate in the community some of these HIB have even resulted into infectious diseases, i.e., zoonotic ones; and also Tanzanians have been found with varying preferences on seeking healthcare services including using modern treatment, traditional healers, self-treatment, and no treatment at all (Good & Kimani, 1980; McCombie, 2002; URT, 2003b). It is against this background that this study empirically assessed HL and its connections to other socio-demographic aspects under humans, animals and environment interface in selected wards in Morogoro municipality and Mvomero districts in Tanzania.

## **2. Materials and Methods**

This paper results out of a cross sectional study conducted in the districts namely Morogoro municipality and Mvomero both located in Morogoro region in Tanzania. According to Tanzania-NBS (2013) the population of Morogoro municipality and Mvomero districts are reported to stand at 315,866 and 312,109 people respectively. Significant occurrences of interactions of humans and animals, also the presence of inhabitants with highly diverse socio-cultural and economical background in the area have qualified the area to be chosen for a study of this nature. The area further qualifies for this study as it is occupied with animal keeping community of Maasai origin; also bordered by Mikumi National Park, it is obvious certain risks existent are emanating from prevalence of certain health behaviours and apparently significant interactions between human and animals. Karimuribo et al. (2005) in their study have also reported health risks incidences in the area.

Using a cross-sectional design both qualitative and quantitative data were collected at a single point in time. The choice of this design is based on being economical in terms of time, financial resources and nature of the study objectives (Kothari, 2004). A structured questionnaire guide using a Computer Assisted Personal Interviewing (CAPI) electronic platform was used for data collection.

This study employed multi stage sampling procedure, which comprised of four stages (in choosing districts, wards, villages/streets, and HHS) which enabled two hundred and forty respondents to be obtained from four purposively selected wards, the next stage two villages/streets from four wards were chosen and finally thirty respondents were selected through simple random sampling from each village/street where animal keeping and related activities plus evidence of selling livestock products are found. The local leaders were involved in preparing sampling frame. The sample size on each village/street is justified by Bailey (1994), who argues that a sub sample of thirty respondents is regarded as the bare minimum for studies in which statistical data analysis is to be done regardless of the population size. IBM-SPSS v20 and Gretl software were used for the purposes of computing frequencies, percentages, mean and maximum scores.

### 3. Measurement of Health Literacy

For the purposes of measuring HL, methodological aspects from European HL Survey were adapted in this study (HLS-EU, 2012, p. 4). To be able to measure HL, respondents were then asked: On a scale from very easy to very difficult, how easy would you say it is to: i.e., (Find information on treatments of illnesses that concern you).

The questions comprised of items which reflected three health pertinent areas (health care, disease prevention, health promotion) and four information processing stages (access, understand, appraise, apply) in connection with health relevant decision-making and tasks on health and other closely related aspects under the interface of humans, animals and the environment. Using items related to health related areas and information processing stages a context specific HL assessment framework for assessing HL under OHEA was developed. It is a matrix measuring the perceived difficulty of performing a selected one health relevant tasks based on a four-point self-report scale (very easy, easy, difficult, and very difficult). The way a respondent will find it easy or difficult to undertake a certain task reflects an individual's HL level under OHEA. To measure HL an index of score was created by allocating four points to every "very easy" response, three points to "easy" response, two points to "difficult" response, and one point to "very difficult" response. Scores were calculated and classified into Inadequate Health Literacy (IHL), Marginal Health Literacy (MHL) and Adequate Health Literacy (AHL). A study by Gazmararian et al. (2003) has also used a similar categorization. For the purposes of categorizing health literacy, scores were cut into three equal groups using SPSS functions to represent inadequate health literacy, marginal health literacy and adequate health literacy.

### 4. Results and Discussion

#### 4.1 Socio-Demographic Characteristics of the Respondents

The results reveal that 42.1% of the interviewed respondents were aged between 21 to 39 years, 26.3% were between 40 to 49 years while 17.1% were between 50-59 years, 10.7% were between 60-69 years and 3.8% were above 70 years. The average age was 43.7 years, and the highest age and the lowest age were 21 and 72 respectively. The sample of the respondents interviewed comprised of 47.9% men and 52.1% women. Slightly more than one-third (39.2%) of the respondents had not gone to school at all, 2.5% had universal adult education, where as 30.0% completed primary school education, 8.8% had attained secondary education, 10.4% had post-secondary/vocational education and 9.2% had graduated from universities. Of the interviewed respondents, about 57.5% of the respondents were married, while only 1.7% were separated, 30.4% were never married/single. Others were 5.4%, 2.5%, 0.8% and 1.7% who were widow, widower, cohabitating and too young to marry. In terms of household size (total number of household members) the mean household size was 5 members with lowest household size (minimum) with 1 member and the highest household size (maximum) with 10 members. Table 1 presents the results in details.

**Table 1. Socio-Demographic Characteristics of the Respondents (n=240)**

Variable	Categories	Percentage
Age in years	21-39	42.1
	40-49	26.3
	50-59	17.1
	60-69	10.7
	> 70	3.8
Level of Education	Not gone to school at all	39.2
	Universal adult education	2.5
	Primary school	30.0
	Secondary school	8.8
	Post-secondary /vocational	10.4
	University	9.2
Sex	Male	47.9
	Female	52.1
Marital status	Never married/Single Married	30.4
	Separated	57.5
	Widow	1.7
	Widower	5.4
	Cohabiting	2.5
	Too young to marry	0.8
Household size	1-3	1.7
	4-7	21.7
	8-11	65.9
	> 12	12.4

#### 4.2 Assessment of Health Literacy

An index was developed based on activities reflecting One Health relevant areas, information processing stages related to health relevant decision-making and tasks on health as well as other associated aspects under the interface of humans, animals and the environment. The results for HL assessment indicate that the mean score was 261.9 while the maximum and minimum scores were 141.0 and 501.0 respectively. Using SPSS (v20) the scores were cut into 3 equal groups to represent health literacy categories into Inadequate Health Literacy (IHL) (below the scores of 211.0), Marginal Health Literacy (MHL) (between 211.0 and 261.0 scores) and Adequate Health Literacy (AHL) (the scores above 261.0). Table 2 presents the HL into categories, the results indicate that 36.3% of the respondents had IHL, 30.8% with MHL and 32.9% had AHL.

There is evidence on socio-demographic characteristics related variables to have predictive effect on other dependent variables in other studies (de Smet et al., 2005; Leka & Jain, 2010; Rauschenbach & Hertel, 2011; European Agency for safety and health at work, 2012; Marinaccio et al., 2013; Rivera-Torres, 2013). This study analyzed the influence of socio-demographic variables on health literacy.

**Table 2. Health Literacy Categories (n=240)**

<b>Health Literacy Category</b>	<b>Frequency</b>	<b>Percent</b>
Inadequate Health Literacy (IHL)	87	36.3
Marginal Health Literacy (MHL)	74	30.8
Adequate Health Literacy (AHL)	79	32.9
Total	240	100.0

The results reveal no association between educational attainment and the level of HL. The result indicates that AHL was observed among category comprised of the “not gone to school at all”, at 34.2% followed by those who had primary school education at 29.1%, 16.5% with post-secondary education, then those with secondary school education at 11.4% and those with university education formed only 8.9% the lowest in the AHL category. This finding is supported by findings from a study by Schrauben and Wiebe (2015) who found that a high level of education does not necessarily ensure a high level of HL. Thus, high educational attainment seems not to be the prime force driving high HL.

The study indicates that HL is lower among older individuals, with 40.2% of those who had IHL were from the elderly age category, followed by 24.1% from the middle aged category, and 21.8% were the aged while young had 13.8% with no adolescent among those who were interviewed was found to have IHL. These findings are in line with findings by Weiss et al. (1992); Williams et al. (1995) and Gazmararian et al. (1999), and which are also reporting lower health literacy amongst older individuals. The result from this study reveals that more females (56.3%) had IHL than males (43.7%), while it was observed that more males (53.2%) were having AHL than females (46.8%). Other studies (Foundation House, 2004; Lee et al., 2012) also reporting an association between sex and HL.

AHL was observed among married respondents at 65.8% in the category followed by never married (singles) at 22.8%, while widower were at 1.3% and for widow and cohabitating was 8.9% and 1.3% respectively. It has been observed by other study (Liu et al., 2015) that the independent influencing factors of health literacy were education, race, occupation, household income, age and marital status ( $p < 0.05$ ). The results on HL Levels based on socio-demographic characteristics of the respondents are presented in Table 3.

**Table 3. HL Categories on Socio-Demographic Characteristics of the Respondents (n=240)**

Variables	Health Literacy Categories			Total	
	Inadequate Literacy	Marginal Literacy	Adequate Literacy		
Highest education	Not gone to school at all	39.1	44.6	34.2	94
	Universal adult education	2.3	5.4	0.0	6
	Primary school	33.3	27.0	29.1	72
	Secondary school	9.2	5.4	11.4	21
	Post-secondary /vocational	12.6	1.4	16.5	25
	University	3.4	16.2	8.9	22
Sex	Male	43.7	47.3	53.2	115
	Female	56.3	52.7	46.8	125
	Total	100.0	100.0	100.0	240
Marital status	Married	47.1	60.8	65.8	138
	Never married	40.2	27.0	22.8	73
	Widower	2.3	4.1	1.3	6
	widow	3.4	4.1	8.9	13
	Separated	3.4	1.4	0.0	4
	Cohabiting	0.0	1.4	1.3	2
Age categories	Too young	3.4	1.4	0.0	4
	Adolescents	0.0	1.4	0.0	1
	Young	13.8	10.8	6.3	25
	Middle aged	24.1	36.5	31.6	73
	Elderly	40.2	33.8	43.0	94
HH size Categorization	Aged -adult	21.8	17.6	19.0	47
	Ideal Family Size	20.7	55.2	24.1	52
	Medium Family Size	55.2	54.1	25.7	129
Total	24.1	51.9	24.1	59	
Total	100.0	100.0	100.0	240	

## 5. Conclusion

This study has several limitations. First, there may have been selection bias, as study participants were not recruited proportionally on each socio demographic sub categories, i.e., equal number of respondents for each category based on sex, education levels, etc. This approach may have brought on board a wider room for comparison within variables. Studies which take this into consideration will be needed in the future. Second, HL was measured based on self-reported questionnaires. It is possible that these participants may report better own HL in a better way. This may have resulted in over-estimation of HL. Third, given the cross-sectional design, we could not determine whether there was a causal relationship between HL and healthy lifestyle characteristics. A longitudinal study will be needed to address this issue.

## 6. Ethical Considerations

This study followed ethical procedures from the University of Zambia in Zambia and the Sokoine University of Agriculture in Tanzania. The researcher clarified the purpose of the study to the local government and village leaders. Participation in this study was voluntary by obtaining written informed

consent from the participants. Also participants signed written informed consent for them to take part in the interviewing and survey process, anonymity was assured as none of information from them were attributed to their names.

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