

# Knowledge and Associated Factors About Cataract Among Adults in Northeast Ethiopia

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## Research article

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# Abstract

**Background:** Cataract is the leading cause of blindness globally and accounts for half of the total blindness in Ethiopia. Despite it is treatable, the lack of knowledge about cataract and its treatment is still a major barrier in the developing countries. Knowledge about the disease and its treatment play a key role for the people with cataract to get timely eye care.

**Objective:** To assess knowledge and associated factors about cataract among adults in Kombolcha, Northeast Ethiopia

**Methods:** Community-based cross-sectional study was implemented. Stratified multistage sampling technique was used to select a total of 847 study participants aged 18 years or older. A face to face interview was applied using a pretested structured questionnaire in Amharic language. The collected data was entered into Epidemiological information version 7 and exported to statistical package for social sciences version 20 for analysis. Descriptive statistics and binary logistic regression with odds ratio were used. Variables with a p-value of less than 0.05 in multivariable logistic regression were considered as statistically significant predictors for knowledge about cataract.

**Results:** A total of 771 participants completed the study with a response rate of 91%. Of the total, 86.0% were from urban kebeles and 50.8% were female. The median age of the participants was 30 years. About 75.6% (583) individuals were familiar with the term cataract. Overall 537 (69.6%) [95% CI: 66.3-72.9] had good knowledge of cataract. Higher educational status [AOR: 6.041; 95% CI: 3.106-11.746], being married [AOR: 1.787; 95% CI: 1.174-2.721], having history of a previous eye examination [AOR: 1.619; 95% CI: 1.053-2.488] and positive history of cataract [AOR: 10.443; 95% CI: 2.078-52.493] were significantly associated with good knowledge about cataract.

**Conclusions:** Overall about two-third of participants had good knowledge about cataract. Higher educational status, being married, having a previous eye examination and a positive history of cataract had a significantly positive association with good knowledge about cataract. As cataract is a leading blinding disease, maximizing the existing knowledge by giving special attention to those not having formal education is essential.

## Background

Cataract is an age related or acquired opacification of crystalline lens of the eye which results in complete loss of vision if left untreated [1–3]. Cataract is the first leading cause of blindness and the second leading cause of visual impairment worldwide. In the sub-Saharan Africa region, 45% of blindness and 32% of visual impairment among older adults contributed by cataract [4]. Likewise, cataract is the leading cause of blindness (49.9%) and low vision (42.3%) in Ethiopia [5].

Vision loss from cataract can be restored over 94% of the success rate in obtaining a good outcome with modern cataract surgery [6]. But this treatment is underutilized in Africa mainly because of a lack of

knowledge about cataract and its treatment [7–11]. The poor knowledge level about cataract attributed to missed or delayed treatment that considerably affects the ability to perform day to day activities and decreased the quality-of-life [12–15]. According to the community based cross-sectional study conducted in south east Asian countries, the good knowledge about cataract ranges from 38.6% in Malaysia to 80.3% in India [16–20].

Similarly, in gulf countries, good knowledge about cataract range from 27.6 in Saudi Arabia to 57.3% in Iran [21–25]. In the African context, a community-based cross-sectional study conducted in Nigeria and Ghana reported that only 28.90% and 30.0% of the study population respectively had good knowledge about cataract [12,15]. Also, a population-based cross-sectional study conducted in Gondar, northwest Ethiopia revealed 61.70% of the population had good knowledge about cataract [26].

With respect to factors, a higher level of education was positively associated with good knowledge about cataract [13,18,21, 22,26]. Those with a tertiary level of education were 4 times likely to know about cataract compared to those without any form of formal education [13]. Considering residency, urban resident adults were more knowledgeable about cataract [12,13,18], But Rural dwellers younger population were more knowledgeable about cataract [18]. Being married [12], being female [21] and high economic status was positively associated with good knowledge of cataract [24,26].

Different studies conducted in different regions of the world showed that history of the previous eye examination [26], previous diagnosis of cataract [22], history of cataract surgery [13] and family history of eye disease [17] was positively associated with good knowledge about cataract.

One of the reasons for high cataract backlog in the study area could be poor knowledge about cataract in the population. Therefore, this study aimed at assessing knowledge about cataract and associated factors to provide a scientific evidence which further might contribute for stakeholders to maximize health promotion and intervention strategies.

## Objectives

*General objective:* To assess knowledge and associated factors about cataract among adults in Kombolcha city, Northeast Ethiopia, 2019.

*Specific Objectives:* To determine knowledge about cataract among adults in Kombolcha city and to identify factors associated with knowledge about cataract among adults in Kombolcha city.

## Methods

A community-based cross-sectional study was conducted in Kombolcha, Northeast Ethiopia. Located 375 km far away from Addis Ababa, and 505 km from Bahir Dar. The city has 12 kebeles (administrative units) with a total population of 149,665. There are four health centers and more than twenty private clinics, but there is no eye care center. The study was conducted from April 26 - May 3, 2019.

All adults living in Kombolcha town randomly selected kebeles were a study population and all adults aged 18 years or older who had lived in Kombolcha city at least 6 months prior to the study were included in the study.

Knowledge was graded as good if the participant answered half or more of the total questions (six or more questions) correctly and as poor if the participant answered less than half of the total questions [18]. The dependent variable was knowledge about cataract (good, poor). The independent variables were including demographic variables, socio economic variables and health related variables.

Sample size was determined by using the single population proportion formula. Considering the proportion of people with adequate knowledge 50 %, marginal error 5%, a design effect of 2 and 10 % of non-response rate, the final sample size was 847. (Detail annexed)

A stratified multistage sampling technique was applied. Kebeles were stratified into urban and rural strata. Then at stage one, three kebeles were selected from each stratum by using simple random sampling. At stage two, participating households were selected from six selected kebeles using a systematic random sampling technique with a sampling fraction (K) of 21. The samples were proportionally allocated to their total number of households. One adult was selected randomly in houses that had more than one. (Detail annexed)

A structured questionnaire adapted from previous studies was used [22, 23, 27]. In order to ensure the quality of data, the questionnaire was translated from English to Amharic (local language) and then back to English by language expertise for consistency. A pre-test was conducted (on 5 % of the sample size) in an area with a similar setting outside the study area (Harbu town), and training was given for data collectors for 1 day. Data was collected in a home to home visit by six optometrists. Face to face interview was conducted using the Amharic version of the questionnaire. The collected data was checked out for completeness, accuracy, and clarity. Data clean up and cross-checking was done before analysis

After coding, the data were entered into Epidemiological Information (EPI INFO) version 7 and exported to Statistical Package for Social Science (SPSS) version 20 for analysis. The descriptive statistic was carried out for each variable to compute frequency and proportion/percentage. The variables that were found with  $P < 0.2$  at bivariable analysis were entered into multivariable analysis using the enter method. The Hosmer and Lemeshow goodness of fit test was used to check model fitness. Multi-collinearity between variables was checked by a variable inflation factor (V. I.F). Odds ratio with 95 % confidence interval at  $p < 0.05$  was used to determine statistically significant association.

## Results

### *Socio-demographic characteristics of the participants*

A total of 771 participants completed the study with a response rate of 91%. About 86.0% were from urban kebeles and 50.8% were females. The median age of the participants was 30 years with an inter-

quartile range of 16 years (Table 1).

## ***Clinical characteristics of participants***

About 215 (27.9%) participants had a previous eye examination at least once in their life and 33(4.3%) had a positive history of cataract (Table 2).

## ***Knowledge about cataract***

In this study 583(75.6%) individuals were familiar with the term cataract. Overall 537(69.6%) (95% CI: 66.3–72.9) had good knowledge of cataract. Broadcast media (television or radio), people having cataract and eye care professionals were the major sources of information for 256 (43.9%), 197(33.8%) and 76(13.0%) of these familiar participants respectively (Figure 3).

## ***Factors associated with knowledge about cataract***

During bivariable analysis using binary logistic regression, sex, educational status, marriage, occupation, family monthly income level, history of a previous eye examination, history of cataract and history of family eye disease were significantly associated with knowledge about cataract. However, in multivariable analysis, only educational status, marital status, history of previous eye examination and history of cataract showed significant association (Table 3).

Participants with primary education was 1.95 (AOR: 1.954; 95% CI: 1.139–3.355) times more likely to have good knowledge about cataract compared to those who were not having formal education. Compared with these participants without formal education, the likelihood to have good knowledge among participants with secondary education and those with educational status of the college or above were 2.5 (AOR: 2.545; 95%CI: 1.499, 4.321) and 6 (AOR: 6.041; 95%CI: 3.106–11.746) times higher respectively.

On the other hand, married adults were 1.78 (AOR: 1.787; 95% CI: 1.174–2.721) times more likely to have good knowledge about cataract compared with single adults.

Those adults who had been examined their eyes at least once in their life were 1.6 (AOR: 1.619; 95% CI: 1.053–2.488) times to be more knowledgeable about cataract than those without a history of a previous eye examination.

Also, adults who had a history of cataract were more than ten (AOR: 10.443; 95% CI: 2.078–52.493) times more likely to have good knowledge about cataract compared to those who had not developed the disease (Table 3).

## **Discussion**

Knowledge about cataract leads to seeking timely eye care service. Timely intervention is a crucial factor to reduce the burden of visual impairment and blindness.

In this study, about 69.6% of the participants had adequate knowledge about cataract. This is higher than the study done in Gondar town (61.7%) [26]. This might be due to the difference in study subjects; in the present study, 25.5% of participants were older than 40 years compared to 15.7% in the latter study. Hence, the age-related nature of the disease might contribute to a better knowledge of aged participants which was supported by different studies [22, 27, 28].

This finding is also higher than the study conducted in rural Nigeria (18.2%) [12]. This difference may be mainly due to the difference in the study setting. In the present study, most (86%) of the participants were urban residents but the later study was on rural residents. People living in urban are more likely to have better exposures to media and eye care professionals that increase access to health education and knowledge [27].

Similarly, this finding is also higher than the findings found in Ghana (4.40%) [13] and the hilly region of Nepal (39.1%) [20]. This contrariety might be due to the variation of the cut point used to grade the good knowledge and educational status of the participants. In the first study, the cut point was answering around more than 75% of the total questions compared to 50% in this study. Regarding the second study, 28.8% of participants did not have formal education compared to the present study (15%). As reported in studies, knowledge about cataract would increase as the educational level increased [18,21,26].

In contrast, this finding is lower than the study conducted in India (80.3%) [18]. This discrepancy may be due to the difference in measuring the proportion of knowledge. In the present study, the proportion was computed among all participants, but in the latter study, it was only among familiar participants with the term cataract.

Nevertheless, this finding is in line with the previous studies conducted in Saudi Arabia, in Tabuk city (66.30%) [23] and Hail region (70.90%) [24]. This might be explained by the similarity of study design and demographic information such as age.

Educational status, marital status, history of previous eye examination and history of cataract had significant association with knowledge about cataract in multivariable logistic regression.

Adults with higher educational status were more likely to have good knowledge about cataract compared with those who did not have formal education. This was supported by other studies [13, 18,21,26]. People with a high level of education are more likely to attend health education programs, understand the written and visual documents and approach to the information sources which build-up knowledge [28].

Marriage was also positively associated with good knowledge in this study. The previous study also reported this association [12]. This might be because of married individuals are more likely to visit health care center [29]. This increases the possibility to get health care professionals and comprehensive health education. This further may contribute to more awareness and knowledge.

The other associated factor was a history of a previous eye examination. Participants who had a history of eye examination at least once in their life were more likely to have good knowledge about cataract. A similar finding was also reported from a previous study [27]. This may be due to undergoing eye examination increases the possibility to attend health education, to have contact with eye care professionals and people having a cataract. Those who had heard a disease from a health professional or the one suffering from the disease indicated as having more understanding about the disease [16].

Having history of cataract was also positively associated with good knowledge about cataract. This association was also mentioned in another study [22]. Knowing as having had cataract indicates that these individuals were more likely in touch with eye care professionals and they might have got an explanation about the condition which makes them more knowledgeable.

## Limitations

As a limitation, homeless adults and severely ill individuals were not included which may reduce its generalizability. Most of the participants were urban residents and educated which might overestimate the proportion of good knowledge.

## Conclusion

Overall about two-third of participants had good knowledge of cataract. Higher educational status, being married, having a history of previous eye examination and a positive history of cataract had a significantly positive association with good knowledge about cataract.

It is better to maximize health promotion programs about cataract specifically targeting people having no formal education through community meetings.

## List Of Abbreviations

AOR Adjusted Odds Ratio

BSc Bachelor of Science

COR Crude Odds Ratio

DM Diabetes Mellitus

Dr Doctor

ETB Ethiopian Birr

HTN Hypertension

MD Medical doctor

Mr Mister

MSc Masters of Science

## **Declarations**

## **Acknowledgements**

University of Gondar, Kombolcha town administration office, and all study participants for their cooperation and willingness.

## **Ethics approval and consent of participate**

Ethical clearance was obtained from the School of Medicine, University of Gondar College of Medicine and Health Science, ethical review committee. Support letter from respective administrative areas (kebeles) were obtained. The purpose of the study was explained to each participant and verbal informed consent was obtained from each study participant before starting interview. Verbal consent was approved by the ethical committees as the procedure was observational and noninvasive. Confidentiality was kept by coding personal identity and locking data with a password. Data collectors gave education and advice to those participants who misunderstood about cataract.

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University of Gondar.

## **Availability of data and materials**

Dataset on which the conclusion was made is available in software and only available on request from Mr. Haile Woretaw (contact address [haileworetaw@gmail.com](mailto:haileworetaw@gmail.com)).

SM developed the proposal, enter data and analyzed. FA review the proposal and develop data collection tool. HW write up the paper and prepares the manuscript. All the authors reviewed and approved the final manuscript.

## **Competing interests**

The authors declare that they have no competing interest.

## **Consent for publication**



Not applicable.

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## Tables

Table 1: Socio-demographic characteristics of the studied participants in Kombolcha city, Northeast Ethiopia, June 2019 (n=771)

<b>Socio-demographic characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Residence</b>		
Urban	663	86
Rural	108	14
<b>Sex</b>		
Male	379	49.2
Female	392	50.8
<b>Age (years)</b>		
40	574	74.5
41-60	145	18.8
>60	52	6.7
<b>Educational status</b>		
without formal education	116	15
Primary school	170	22
Secondary school	281	36.5
College or above	204	26.5
<b>Marital status</b>		
Single	251	32.5
Married	433	56.2
Divorced	50	6.5
Widowed	37	4.8
<b>Occupation</b>		
Merchant	145	18.8
Government employee	140	18.2
Private workers	145	18.8
Housewife	154	20
Unemployed	69	8.9
Others	118	15.3
<b>Family monthly income (ETB)</b>		
1000	57	7.4
1001-3000	330	42.8
3001-5000	230	29.8
>5000	154	20

Others = Farmers, students and retired; ETB= Ethiopian birr

Table 2: Clinical characteristics of the studied participants in Kombolcha city, Northeast Ethiopia, June 2019(n=771)

<b>Clinical characteristics</b>	<b>Frequency</b>	<b>Proportion (%)</b>
<b>Previous eye examination</b>		
Yes	215	27.9
No	556	72.1
<b>History of cataract</b>		
Yes	33	4.3
No	738	95.7
<b>History of cataract surgery</b>		
Yes	25	3.2
No	746	96.8
<b>History of family eye disease</b>		
Yes	217	28.1
No	554	71.9
<b>Chronic disease (DM/HTN or both)</b>		
Yes	66	8.6
No	705	91.4

Table 3: Factors associated with knowledge about cataract by bivariable and multivariable logistic regression analysis among adults in Kombolcha city, Northeast Ethiopia, 2019 (n=771)

Variables	Knowledge about cataract		COR (95% CI)		AOR (95% CI)	
	Good	Poor				
<b>Residence</b>						
Rural	67	41	1		1	
Urban	470	193	1.490 (0.976-2.275)		1.084 (0.670-1.753)	
<b>Sex</b>						
Female	258	134	1		1	
Male	279	100	1.449 (1.063-1.975)		1.365 (0.923-2.017)	
<b>Educational status</b>						
Without formal education	65	51	1		1	
Primary school	109	61	1.402 (0.866-2.271)		1.954 (1.139-3.355)*	
Secondary school	192	89	1.693 (1.085-2.640)		2.545 (1.499-4.321)**	
College or above	171	33	4.066 (2.410-6.858)		6.041 (3.106-11.746)**	
<b>Marital status</b>						
Single	164	87	1		1	
Married	316	117	1.433 (1.024-2.004)		1.787 (1.174-2.721)**	
Divorced	33	17	1.030 (0.543-1.953)		1.726 (0.825-3.612)	
Widowed	24	13	0.979 (0.475-2.019)		1.184 (0.467-3.003)	
<b>Occupation</b>						
Unemployed	41	28	1		1	
Merchant	97	48	1.380 (0.763-2.495)		1.238 (0.652-2.349)	
Government employee	118	22	3.663 (1.890-7.100)		1.574 (0.745-3.328)	
Private worker	105	40	1.793 (0.981-3.276)		1.607 (0.843-3.065)	
Housewife	101	53	1.301 (0.726-2.334)		1.542 (0.769-3.089)	
Other	75	43	1.191 (0.648-2.191)		1.113 (0.573-2.163)	
<b>Monthly income (ETB)</b>						
1000	31	26	1		1	
1001-3000	221	109	1.701 (0.962-3.005)		1.710 (0.929-3.149)	
3001-5000	160	70	1.917 (1.060-3.466)		1.378 (0.721-2.633)	
>5000	125	29	3.615 (1.870-6.991)		1.981 (0.957-4.101)	
<b>Previous eye</b>						

## examination

No	365	191	1	1
Yes	172	43	2.093 (1.435-3.052)	1.619 (1.053-2.488)*

## History of cataract

No	506	232	1	1
Yes	31	2	7.107(1.687-29.945)	10.443(2.078-52.493)**

## History of chronic disease

No	486	219	1	1
Yes	51	15	1.532 (0.843-2.784)	0.966 (0.472-1.977)

## History of eye disease

No	374	180	1	1
Yes	163	54	1.453(1.018, 2.073)	1.619(1.053, 2.488)

Where, \*=p<0.05; \*\* = p<0.01; 1 = reference; CI= Confidence Interval

## Figures

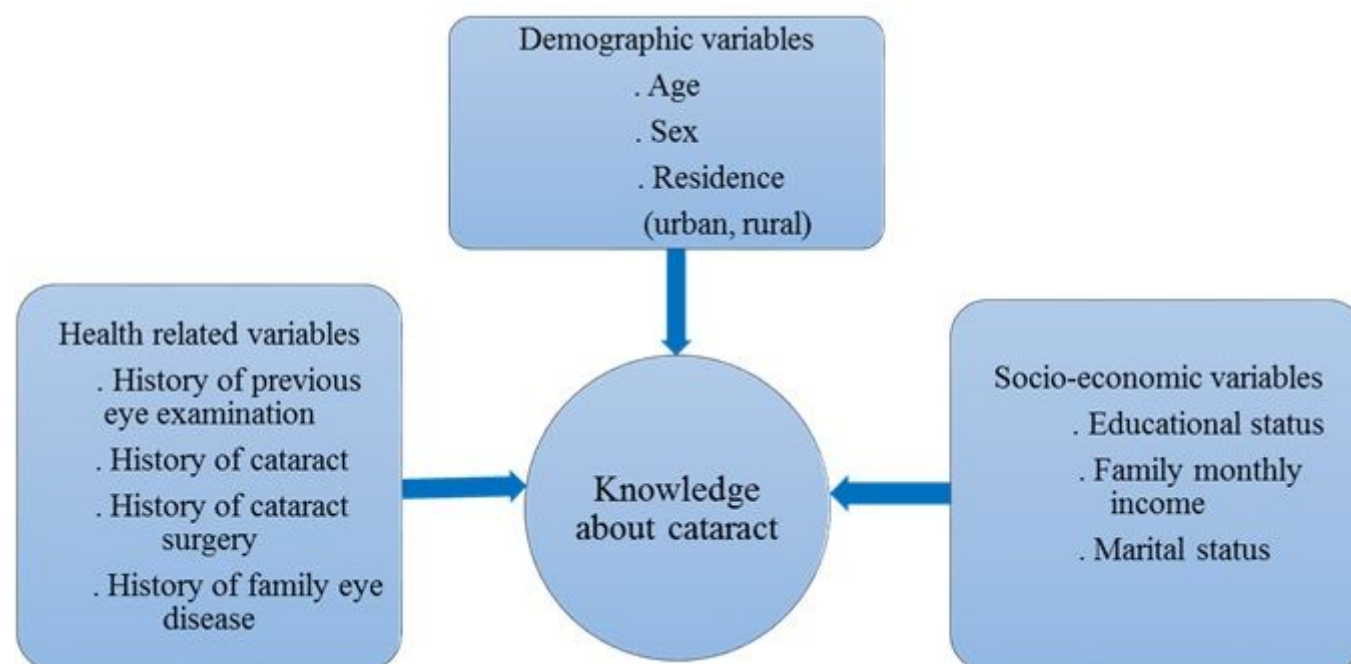
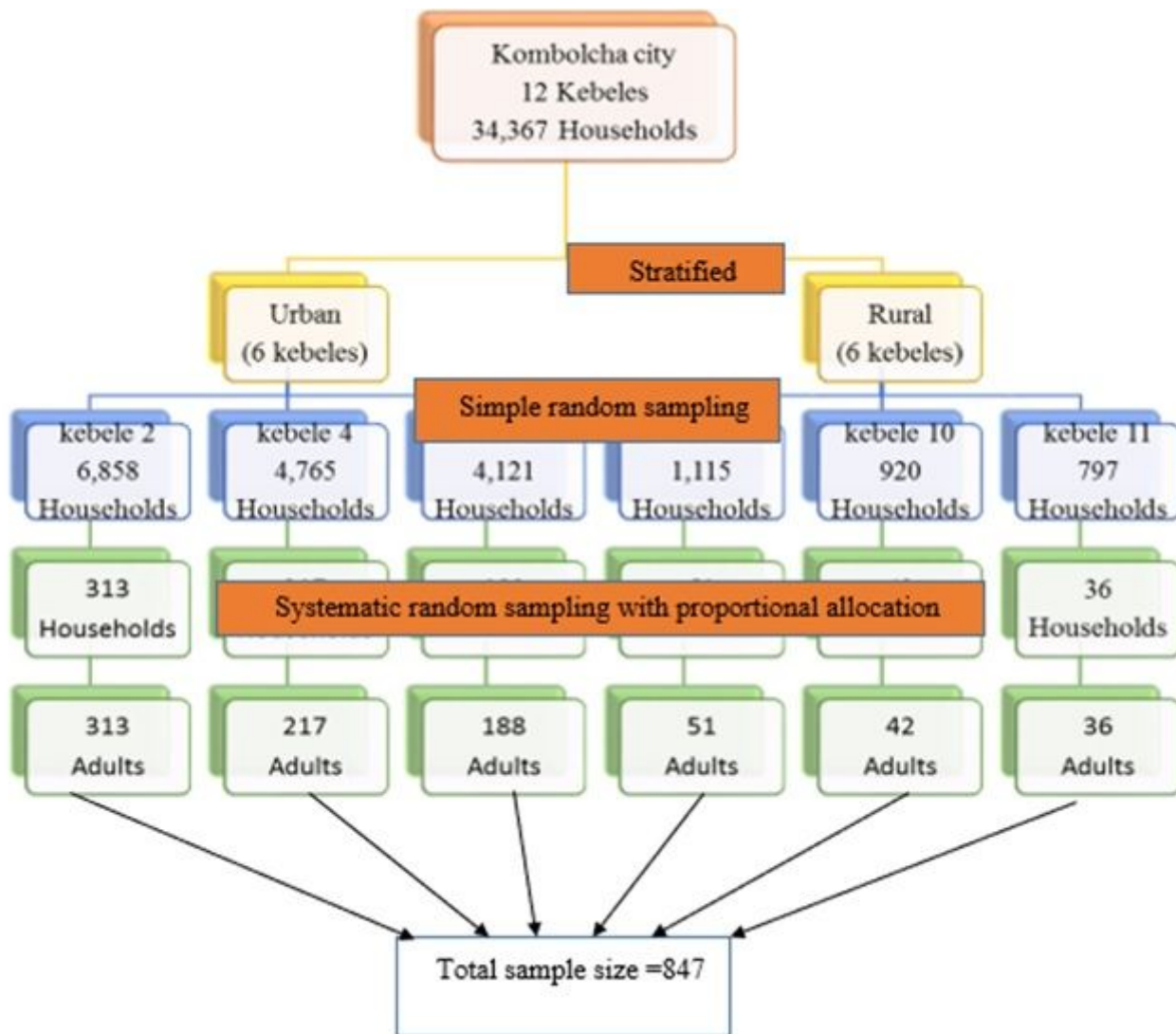


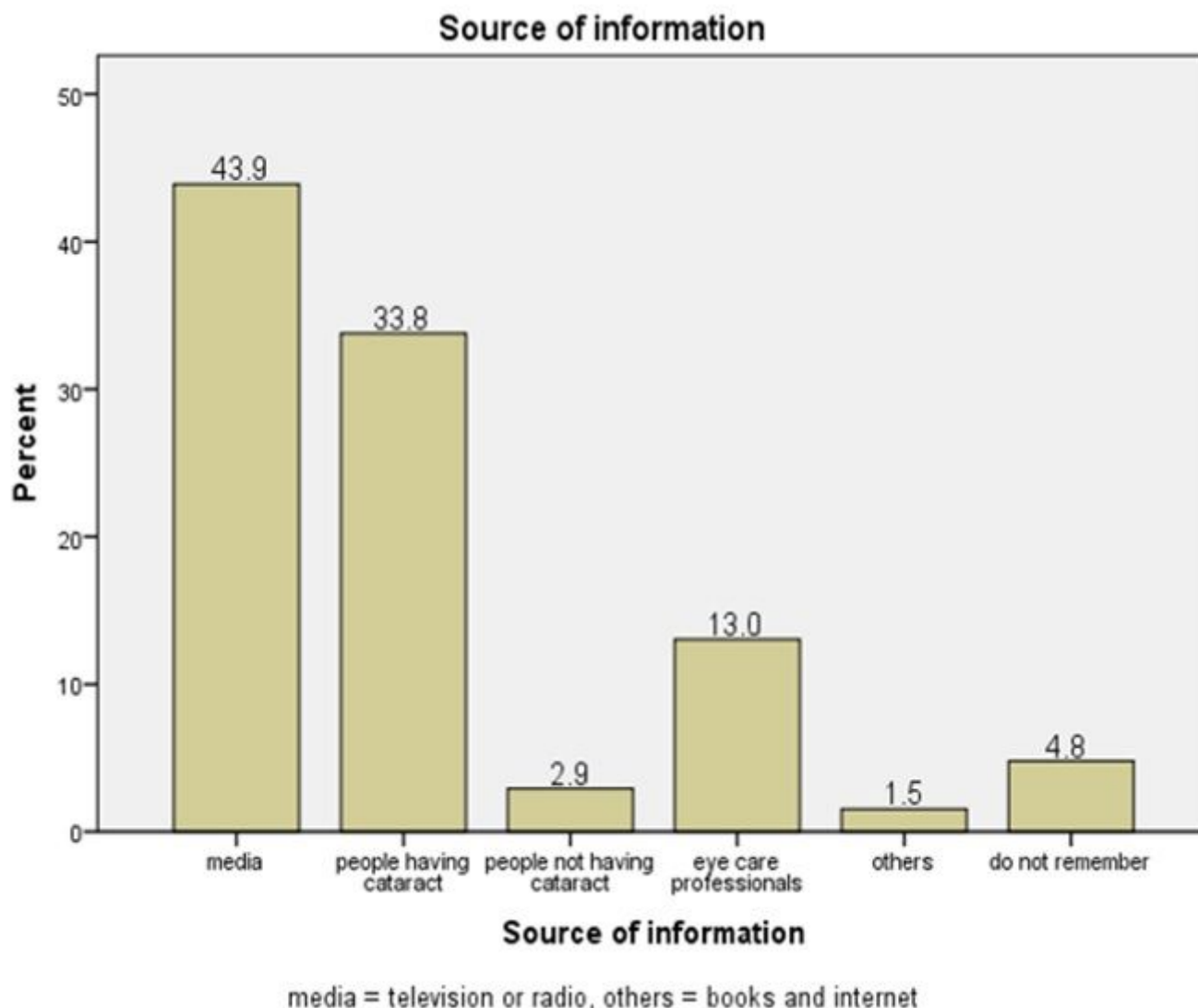
Figure 1

Conceptual framework on knowledge and associated factors about cataract among adults in Kombolcha city, Northeast Ethiopia, 2019



**Figure 2**

Schematic representation of sampling procedure for knowledge and associated factors about cataract in Kombolcha city, Northeast Ethiopia, 2019



**Figure 3**

Source of information about cataract among adults in Kombolcha city, Northeast Ethiopia, June 2019(n=583)

## Supplementary Files

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