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# Prevalence and Risk Factors of Eye Problems Among Older People in Central Tropical Region, Naypyitaw Union Territory, Myanmar

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**PURPOSE:** Vision is essential one and it is proximately linked with quality of life. In the meantime, older populations are increasing rapidly in the whole world and thus, age-related macular degeneration, glaucoma, cataract and diabetic retinopathy are becoming common. Hot and dusty environment, inadequate access to water and poor facial hygiene are risk factors for blindness.

**MATERIALS AND METHOD:** Lewe Township was purposively selected due to its high prevalence of eye problems. A cross-sectional study was conducted and simple random sampling was applied to achieve desired sample size. The structured questionnaires were used to collect data including screening of eye problems from 414 elderly population. Frequency, percentage, mean, SD and other descriptive analysis were determined and chi-square test for associations was constructed.

**RESULTS:** Cataract was the highest prevalence rate with 40.8% followed by refractive error (27.3%) and pterygium (12.8%) among older people population in research area. While knowledge level indicated good level (88.4%), good attitude level (21.3%) and good practice level (27.1%) were noticeably low among older people. In the meantime, there were significant associations between age ( $p=0.003$ ) and education level ( $p=0.001$ ) with knowledge level of older people while age ( $p=0.001$ ), education level ( $p<0.001$ ), occupation ( $p=0.038$ ) showed statistically association with attitude level.

**CONCLUSION:** The study noticed that higher prevalence of eye problems with relatively poor level of eye care seeking practice and unawareness on risk factors in targeted community. Knowledge and awareness for changing attitude about eye problems, eye care seeking behaviour and preventive practices should be accomplished more.

**KEYWORDS:** Eye problems, Prevalence, Risk Factors, Older People, Myanmar

## INTRODUCTION

Nowadays around the world, eye diseases are widespread. According to the World Health Organization, the most important three eye diseases or conditions that are a potential threat to the high and industrialized countries' population are diabetic retinopathy, glaucoma, and age-related macular degeneration. In the other hand, for middle and low-income countries, cataract is responsible for major cause of blindness and visual impairment. One more vital reason for visual harm is refractive errors. Some of the important reasons for vision loss or low vision are age, access to healthcare, healthcare facilities, gender, genetic problems and the prevalence of family history.<sup>1</sup>

For the whole nation of Myanmar, total population is 59 million and 60 years and above is 5.23 million in the year of 2014. The proportion of elderly population (over 60 years) was 8.8 percent in the same year and according to UN projections, by 2030 it will increase to 15% of the population, and by 2050 older people will consist of a quarter of Myanmar's total population. Shortly after 2035, persons aged 60 and older will be more than children under age 15.<sup>2</sup>

According to the data from Rapid Assessment of Avoidable Blindness Survey, Myanmar in 2018, prevalence of blindness is 2.9%. Prevalence of severe visual impairment is 3.4%. Cataract blindness is 72.9% and severe cataract visual impairment is 86.4%. The other major causes of blindness were glaucoma (11.7%), corneal opacity (2.9%), surgical complications (2.3%), trachoma (1.6%) and diabetic retinopathy (0.9%). Other major cause of visual impairment was uncorrected refractive error (21.1%).<sup>3</sup> According to the climate condition of Myanmar, hot, dry and dusty environment and inadequate access to water and facial hygiene are also risk factors for being blindness.<sup>4</sup> The elderly care, as one of the target population in Myanmar, was aimed to promote active and healthy aging by the elderly health care project of ministry of health since 1992-93. This program is based on comprehensive health care: promotive, preventive, curative and rehabilitative care.<sup>5</sup>

In Myanmar, increasing age plays as a major risk factor for blindness, visual impairment, cataract, glaucoma and trachoma. Roughly one person in three has some form of vision-reducing eye disease by the



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age of 65. Causes of eye diseases can be hypothesized as many factors and the most common are smoking, alcohol consumption, diet and ageing.<sup>6</sup> Other risk factors may include a family history of an eye disease; certain lifestyle behaviors (for example, working under direct sunlight); the presence of disease biomarkers, such as druse in the case of Age-Related Macular Degeneration; high intraocular pressure in the case of glaucoma; or diabetes in the case of diabetic retinal disease.<sup>7</sup> There are certainly many areas that endure with poor vision or remain blind due to lack of access to basic eye care services. It was more preferably in rural area than urban counterparts that very high rates of visual impairment in Myanmar and northern India.<sup>2-8</sup>

Knowledge and awareness about eye diseases, health seeking behavior and preventive practices should be accomplished in the community and the consequence should be reviewed and applied to empower people. Since health seeking behavior is essential in encountering blindness, not understanding about the nature of disease, where to look for health care and not knowing to take preventive measures get worse the disease condition and threaten the community. Thus, this cross-sectional study was organized to explore the basic characteristics associated with eye problems among older people living in rural area of Lewe Township, Naypyitaw Union Territory, Myanmar.

## MATERIALS AND METHOD

Lewe township was purposively selected as it is high prevalence township for eye problems among other townships in Naypyitaw and older people ratio is relatively high. From among the 261 villages of Lewe, 5 villages (Kunchan village, Kyarinn village, Aunggone village, Thabyaypin village and Sharchaung village) with highest older people population were chosen. The sample size was calculated by using one population proportion formula<sup>9</sup> with the reference value of proportion of people who have cataract from Rapid Assessment of Avoidable Blindness Survey, Myanmar in 2018<sup>3</sup> and 414 older people who aged 50 years and above and can communicate very well were recruited by systemic random sampling based on a list provided by the local administrative unit and interviewed via structured questionnaires and made eye care screening using ophthalmoscope by ophthalmologist. The standard questionnaire forms in English language were

produced with reference from WHO cataract survey questionnaires and previous relevant surveys and reviewed by two experts from Prevention of Blindness and Trachoma Control Programme, Naypyitaw, Myanmar. Back-translation methods were used for rendering responses into Burmese. Pre-test was done with thirty respondents in another similar villages of Lewe township (Naungbo village and Alar village). Cronbach's Alpha coefficient of the questionnaires was calculated for reliability in knowledge and attitude part of questionnaire, resulting 0.722. Kuder-Richardson formula 20 (KR20) was measured to test the internal consistency of the questions with dichotomous choices as satisfactory. The majority of questions are entitled as single or multiple response with predefined choices. The information covered general characteristics for each resident together with risk factors for eye problems, knowledge, attitude and practice regarding prevention of eye problems.

The data-collection process was carried out in all selected villages during September 2018. The research team was set up with one ophthalmologist from 200-Bedded hospital, Pyinmana township and two health assistants from Prevention of Blindness and Trachoma control Programme, Pyinmana township. Those health assistants were trained by the researcher for one day so as to understand the questionnaires, data-collection process, practicing under real conditions, and human ethics. The data collectors were also requested to explain the questionnaire clearly to the respondents and not to prompt correct answers to avoid bias. Collected data were coded and entered by using Epi-data 3.1 and transferred to STATA version 13.0 and analyzed. Frequencies, proportions, and mean and standard deviation were used to describe the descriptive statistics and mean value were used to categorize knowledge, attitude and practice level. Chi-square test and correlation were used to illustrate associations. Statistical significance was set at 0.05. Ethical approval for this study was submitted and approved by the Ethics Review Committee on Medical Research involving Human Subjects, Department of Medical Research, Ministry of Health and Sports (Approval Number – Ethics/DMR/2018/144). The respondents can decide voluntarily for participation in the study after the interviewer explained the objectives of the study and obtained informed consent from the respondents.

**RESULTS**

Among 414 participants, majority of respondents were between 50-65 years (57.7%), female (65%), married (60.6%), with primary level of education (53.9%), farmers (42.5%), with less than 5 household members (61.4%) and possess monthly family income of less than 500,000 Kyats (62.8%) respectively. (Table 1)

CHARACTERISTICS	FREQUENCY	PERCENTAGE
<b>AGE (YEARS)</b>		
50-65	239	57.7
>65	175	42.3
<b>SEX</b>		
Male	145	35.0
Female	269	65.0
<b>MARITAL STATUS</b>		
Single	49	11.9
Married	251	60.6
Widow	104	25.1
Separate/divorce	10	2.4
<b>EDUCATION LEVEL</b>		
Illiterate	50	12.1
Primary	223	53.9
Secondary	70	16.9
High school	25	6.0
Graduated	9	2.2
Others*	37	8.9
<b>OCCUPATION</b>		
House work	113	27.3
Farmer	176	42.5
Retired	6	1.5
Labour	65	15.7
Unemployment	18	4.3
Others**	36	8.7
<b>HOUSEHOLD MEMBERS</b>		
<5	254	61.4
≥5	160	38.6
<b>MONTHLY FAMILY INCOME</b>		
<500,000 Kyats***	260	62.8
≥500,000 Kyats	12	2.9
Do not want to answer	142	34.3

**Table 1.** General characteristics of 414 respondents (\*Monastery school education: \*\*Own business and traders: \*\*\*1 USD~1550 Kyats)

Risk factors for eye problems were explored among 414 older people and the results indicated that 45% of older

people had underlying diseases and among them, hypertension was highest prevalence with 51.1%, 53.9% had excessive sunlight exposure, 20.5% were smoking, 27.5% had previous history of eye injury, and 6.3% had alcohol drinking history. (Table. 2)

RISK FACTORS	FREQUENCY	PERCENTAGE
<b>UNDERLYING DISEASES</b>		
Cardiovascular disease	12	2.9
Cardiovascular disease+ Diabetes + Hypertension	1	0.2
Diabetes	21	5.1
Diabetes + Hypertension	13	3.1
Hypertension	95	22.9
Cancer	3	0.7
Others*	41	9.9
No underlying diseases	208	50.2
Did not know	20	4.8
Excessive sunlight exposure	223	53.9
Smoking	85	20.5
History of Injury to eyes	114	27.5
Alcohol Drinking	26	6.3

**Table 2.** Risk factors for eye problems of 414 older people (\*Joint pain, headache and muscular pain)

Regarding knowledge, attitude and practice related with eye problems after categorizing into groups based on mean scores (≥Mean is Good level and <Mean is poor level), the results showed that 88.4% of older people had good level of knowledge on eye problems meanwhile 78.7% had poor attitude on eye problems. These effects can also be seen in practice score as only 27.1% of older people seek eye care for their eye health (Table 3).

DESCRIPTION	FREQUENCY	PERCENTAGE
<b>OVERALL KNOWLEDGE</b>		
Good	366	88.4
Poor	48	11.6
<b>OVERALL ATTITUDE</b>		
Good	88	21.3
Poor	326	78.7
<b>OVERALL PRACTICE</b>		
Good	112	27.1
Poor	302	72.9

**Table 3.** Overall level of knowledge, attitude and practices regarding eye problems (n=414) (\*Grouping by mean scores)

According to the screening results by ophthalmologist, the prevalence of eye problems is significantly high among rural older people population. Cataract is the highest one as 40.8% of older people suffer this followed by refractive error (27.3%) and pterygium (12.8%) (Table 4).

DESCRIPTION	FREQUENCY	PERCENTAGE
<b>EYE PROBLEMS</b>		
Cataract	169	40.8
Refractive error	113	27.3
Pterygium	53	12.8
Corneal opacity	15	3.6
Epiphora	9	2.2
Glaucoma	8	1.9
Corneal ulcer	4	0.9
Conjunctivitis	3	0.7
Optic nerve atrophy	3	0.7
Retinitis pigmentosa	1	0.2
No eye problem	36	8.7

**Table 4.** Prevalence of eye problems (n=414)

Table 5 described that there were significant associations between age (p=0.003) and education level (p=0.001) with knowledge level of older people while age (p=0.001), education level (p<0.001), and occupation (p=0.038) showed statistically association with attitude level. Conversely, there were no associations with assembled variables and practice level at p-value <0.05.

Table 6 showed that there was a significant association between smoking (p=0.026) and presence of eye problems while other risk factors have no significant associations with presence of eye problems at p-value <0.05.

Table 7 described that there were no significant associations between knowledge, and attitude, and presence of eye problems at p-value<0.05. However, practice level was significantly associated with presence of eye problems at p-value=0.039.

Lastly, table 8 illustrated the correlations among knowledge, attitude and practice. There were positive association between knowledge and attitude, and knowledge and practice. Yet, there were no

CHARACTERISTICS	KNOWLEDGE LEVEL			ATTITUDE LEVEL			PRACTICE LEVEL		
	Good n (%)	Poor n (%)	p-value	Good n (%)	Poor n (%)	p-value	Good n (%)	Poor n (%)	p-value
<b>AGE (YEARS)</b>									
50-65	221(92.5)	18(7.5)	*0.003	64(26.8)	175(73.2)	*0.001	94(26.6)	259(73.4)	0.640
>65	145(82.9)	30(17.1)		24(13.7)	151(86.3)		18(29.5)	43(70.5)	
<b>SEX</b>									
Male	129(89.0)	16(11.0)	0.794	30(20.7)	115(79.3)	0.836	39(26.9)	106(73.1)	0.958
Female	237(88.1)	32(11.9)		58(21.6)	211(78.4)		73(27.1)	196(72.9)	
<b>MARITAL STATUS</b>									
Single	43(87.8)	6(12.2)	0.880	12(24.5)	37(75.5)	0.556	10(20.4)	39(79.6)	0.400
Married	323(88.5)	42(11.5)		76(20.8)	289(79.2)		102(27.9)	263(72.1)	
<b>EDUCATION</b>									
Primary school	265(85.5)	45(14.5)	*0.001	52(16.8)	258(83.2)	*<0.001	85(27.4)	225(72.6)	0.928
High school and above	101(97.1)	3(2.9)		36(34.6)	68(65.4)		27(26.0)	77(74.0)	
<b>OCCUPATION</b>									
Unemployed	124(90.5)	13(9.5)	0.347	21(15.3)	116(84.7)	*0.038	38(29.0)	93(71.0)	0.536
Employed	242(87.4)	35(12.6)		67(24.2)	210(75.8)		74(26.1)	209(73.9)	
<b>NUMBER OF HOUSEHOLD MEMBERS</b>									
<5	221(87.0)	33(13.0)	0.263	50(19.7)	204(80.3)	0.325	75(29.5)	179(70.5)	0.153
≥5	145(90.6)	15(9.4)		38(23.8)	122(76.2)		37(48.7)	39(51.3)	

**Table 5.** Associations between general characteristics and knowledge, attitude and practice regarding eye problems (n=414)

RISK FACTORS	PRESENCE OF EYE PROBLEMS		
	Yes n (%)	No n (%)	p-value
<b>UNDERLYING DISEASE</b>			
Yes	168(90.3)	18(9.7)	0.271
No	198(86.8)	30(13.2)	
<b>EXCESSIVE SUNLIGHT EXPOSURE</b>			
Yes	196(87.9)	27(12.1)	0.724
No	170(89.0)	21(11.0)	
<b>SMOKING</b>			
Yes	81(95.3)	4(4.7)	*0.026
No	285(86.6)	44(13.4)	
<b>HISTORY OF EYE INJURY</b>			
Yes	97(85.1)	17(14.9)	0.194
No	269(89.7)	31(10.3)	
<b>ALCOHOL DRINKING</b>			
Yes	25(96.2)	1(3.8)	0.202
No	341(87.9)	47(12.1)	

**Table 6.** Associations between risk factors of eye problems and presence of eye problems (n=414)

DESCRIPTIONS	PRESENCE OF EYE PROBLEMS		
	Yes n (%)	No n (%)	p-value
<b>KNOWLEDGE LEVEL</b>			
Good	326(89.1)	40(10.9)	0.243
Poor	40(83.3)	8(16.7)	
<b>ATTITUDE LEVEL</b>			
Good	78(88.6)	10(11.4)	0.939
Poor	288(88.3)	38(11.7)	
<b>PRACTICE LEVEL</b>			
Good	105(93.8)	7(6.2)	*0.039
Poor	261(86.4)	41(13.6)	

**Table 7.** Associations between knowledge, attitude and practice, and presence of eye problems (n=414)

drastically significant between them at p value <0.05.

DESCRIPTIONS	ATTITUDE		PRACTICE	
	r	p-value	r	p-value
KNOWLEDGE	0.0406	0.408	0.0458	0.494
ATTITUDE			-0.0435	0.515

**Table 8.** Correlations between Knowledge, attitude and Practice (n=414)

**DISCUSSION**

Nearly half of the older people suffered from cataract (40.8%) as leading eye problem in the community. This result was similar to a study in India.<sup>10</sup> Refractive error was found to be second major eye problem (27.3%) followed by pterygium (12.8%). Surprisingly, 91.3%, out of 414 older people suffered at least one kind of eye problems. Although the prevalence of eye problems was quite high, most risk factors of eye problems have no significant association with eye problems except smoking. About half of older people (50.2%) had no underlying diseases such as

cardiovascular disease, diabetes and hypertension which can lead to eye problems. 53.9% of respondents had excessive exposure to sunlight. Considering about eye injury, only 27.5% of older people had experience to eye injury. Though only 20.5% of respondents had smoking habit, 81 out of 85 older people who had smoking habit suffered eye problems, and there was also statistically significant association between smoking and presence of eye problems ( $p$ -value=0.026) at  $p$ -value<0.05. It was confident according to similar study.<sup>11</sup>

Knowledge level was quite high as 88.4% of older people had good knowledge. The result was nearly the same with other study.<sup>12</sup> However, attitude and practice levels were substantially low percentages as only 21.3% of respondents had good level of attitude and only 27.3% had good practice. The results were confident with other studies.<sup>13,14</sup> This might be explained by some reasons; (a) difficult access to diagnosis and treatment services, (b) doubtful health education curriculums by ministry, (c) cultural beliefs, and information, education and communication (IEC) materials distributed by other organizations.<sup>15</sup> Therefore, effective health education system from ministry of health and sports, strengthening eye care program from International Non-Governmental Organizations (INGO), Local Non-Governmental Organizations (NGO) and very informative mass media are punctually desired in the study area.

Distinctly, 88.4% of older people showed a good level of knowledge, even though they are living in rural area and 74.9% of older people had primary education level. This can be explained as community people can access easily to all education media and the effectiveness of interventions implemented by government and other partners also seem to have some impact. There were significant associations between age ( $p$ =0.003), education status ( $p$ =0.001) and knowledge level of respondents. Education status was also associated with knowledge of eye problems in different study in India.<sup>16</sup> Older group of age had less percentage on knowledge level as they retired or took rest from their work and might reduce their interest. Among the respondents who had good knowledge level, 74.9% were primary education level. Among the older people, only 21.8% showed good attitude level. This might be occurred even they have good knowledge on eye problems because of cultural

belief and wrong perception that eye problems were due to old age. Meanwhile, there were significant associations between age ( $p$ =0.001), education status ( $p$ <0.001), occupation status (0.038) and attitude level. This may imply that older people with high school and above level of education had more good attitude level. Moreover, among older people who had <500,000 kyats of monthly family income, only 17.2% had good attitude level which was similar with a study in China.<sup>17</sup>

Contrastingly, only 27.1% of older people had good practice level. This might be due to poor access to eye care services and financial problems.<sup>18</sup> It was significantly low and considerable, that might be needed more new kind of interventions to improve eye diseases screening programs and eye care seeking behaviours. Although there was no significant association between socioeconomic factors and practice level, this can be considered as their eye care seeking practices should be improved whatever they have different kinds of socioeconomic status.<sup>19,20</sup>

About associations between risk factors of eye problems and presence of eye problems, only smoking ( $p$ =0.026) had significant association with presence of eye problems. Among 85 older people who had smoking habit, 81 people (96.4%) occurred eye problems. Moreover, there were no significant associations between knowledge, and attitude, and presence of eye problems at  $p$ -value<0.05. However, practice level was significantly associated with presence of eye problems at  $p$ -value=0.039. This can be explained that although knowledge, attitude and practice on eye problems were important factors, other risk factors like smoking status can also be considered in addressing eye problems.<sup>21-23</sup>

About correlations among knowledge, attitude and practice, the results revealed that there was a negative association between attitude and practice, which means that even improving attitude level, practice will still remain or straightly tend to poor. However, there was positive association between knowledge and practice level and it showed that if older people had more familiar with information on eye diseases or eye problems, their practice are going to improve.<sup>24,25</sup> Therefore, it seems that new interventions should be focused separately on each part. However, there was no statistical significance between knowledge, attitude, and practice at  $p$ -

value < 0.05.

## CONCLUSION

The study noticed that higher prevalence of eye problems with relatively poor level of care seeking practice and unawareness on risk factors in targeted community. The results of the study provided for closing the disparity in the primary eye care intervention of public health concern. Knowledge and awareness for changing attitude about eye problems, health seeking behavior and preventive practices should be accomplished more in the community and implementation of primary eye care training for community health volunteers, enhancing eye health education program at each level including primary care unit level should be reviewed and applied to empower people. According to the results of this study, community development programs, like improving access to eye care services and community support programs for those who had financial problems should also be considered as essential intervention programs. Finally, it is recommended as further area of research to conduct research following interventional community based action research.

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