

# What Drives Client Choices? Factors Influencing Optical Frame Selection At Korle-Bu Teaching Hospital Eye Centre

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## Abstract

**Introduction:** Visual impairment is a significant global health concern and there is growing demand for optics and optical frames. The factors affecting the choice of optical frames may be varied as a result of changing personal or society needs.

**Aim:** To determine the factors affecting the choice of optical frames in the Korle Bu Teaching Hospital.

**Methods:** This was a cross-sectional study conducted at the Lions Eye Centre of the Korle Bu Teaching Hospital. Data was entered using Excel and exported to be analyzed using Statistical Package for Social Sciences -23 (SPSS 23). Analysis was descriptive and association tests using the Chi-square test and forest plots to find statistically significant variables ( $p < 0.05$ ).

**Results:** From the study, 80 out of 100 participants answered they liked optical frames, 16 responded

that they did not like them and 4 did not respond. The mean age  $\pm$  standard deviation of the respondents was  $36.1 \pm 16.2$ . Over half (55.4%) of the respondents had obtained tertiary education. Among the respondents, 43% were formally employed, 29% were informally employed and 18% unemployed. Two (2) people received high-income, 46 and 26 persons respectively received medium and low incomes, whilst the rest did not disclose their wealth index. A significant association was found between the age of participants and the choice of optical frame.

**Conclusion:** From the study, only age was a significant factor that influenced the choice of optical frames. It is desirable for the department to stock a variety of frames according to the age range of the clients.

**Keywords:** Optical frames, refractive error, vision correction, visual impairment

## Introduction

Visual impairment is a significant global health concern as over 70% of the workforce requires vision correction.<sup>1</sup> Persons with visual impairment because of refractive error range from 82 million to 184 million, comprising one-third to nearly half of all those with impaired vision.<sup>2</sup> It has been documented that 35% to 85% of persons with a refractive error in developing countries are without glasses, even among groups with a strong requirement for highly accurate vision such as professional drivers.<sup>3,4</sup>

Also, one out of every four children have a vision problem even though 80% of all learning takes place visually in children.<sup>5</sup> Approximately, 30% to 60% of rural Chinese secondary students have myopia (spherical equivalent  $-0.50$  diopters in both eyes), whereas, nearly two-thirds of these children do not own or wear appropriate glasses.<sup>6</sup> Refractive error is associated with significant decrements in self-reported visual function in these children.<sup>5-6</sup> About 143 million adults (64% of the adult population) wear prescription eye wears. These prescription eye wears include the use of

reading glasses, eye protections such as goggles and sunglasses.<sup>3,7,8</sup> Glasses, also called spectacles or eyeglasses, are devices made up of glass or hard plastic lens mounted in a frame that holds them.<sup>9</sup> About 75% of eyeglasses frame purchases are for frames of \$150 or less.<sup>3,10</sup>

Choice of frames are influenced strongly by various factors. When choosing frames for fashion and clinical purposes various factors are considered which include color, quality, brand and makeup.<sup>11</sup> Generally, the makeup of optical frames has become significantly modernized and hence institutions like hospitals should pay attention to it and adapt. Glasses that are to be provided for clients must always be available, affordable, beautiful and comfortable. As other Sciences like plastics, reconstructive surgery and prosthetics meet emotions, psychological and fashionable needs of their client, so should optics.<sup>10</sup> This study aims therefore, to highlight significant factors contributing to the choice of optical frames at the Korle-Bu Teaching Hospital.

## Methods

This was an observational cross-sectional study conducted at the Optics Unit in Lions Eye Center of the Korle-Bu Teaching Hospital (KBTH). It is a tertiary teaching facility and has a full complement of staff for effective Eye Health delivery. The study population consisted of patients assigned to the Optic center to take glasses at the facility. Inclusion criteria were patients between the ages of 15 to 60 years diagnosed to take or replace glasses at the Optics Unit. Exclusion criteria were patient who did not consent to participate and patients who could not read English to fill the forms or did not understand the language of the interviewer for a verbal explanation in the local language. The sample size was calculated from Cochran's formu-

lae for sample determinations for a cross-sectional study.<sup>7,9</sup> A total of 100 participants were included in the study. Approval for the study was sought from the Ethical and Protocols Review Board of School of Dispensing Optics, Oyoko. Permission was obtained from the Eye Centre at KBTH to allow access to patients' data. The collection of data was from 3rd March 2020 to 20th June 2020 after approval of the study. Information required was read in English and/or explained in other local dialects (Twi or Ga) for clients who could not see properly or understand English. The data captured had two main parts. Socio-demographic and factors affecting optics frame choices. All information was carefully taken and checked to reduce error and missing data. To ensure confidentiality, names of participants did not appear on any report. The data was analyzed with excel and statistical package for Social Science (SPSS) version 23.0 software. Simple frequency, percentages, mean, standard deviation, and cross-tabulations computed were used to describe the data. Chi-square and logistic regression (inferential statistics) were used, and statistical significance set at a confidence level of 0.05.

## Results

There were 55 female and 45 male respondents. From the results, the mean age  $\pm$  Standard deviation of the respondents was  $36.1 \pm 16.2$ . Over half (55.4%) of the respondents had obtained tertiary education and 97% had at least primary education. Forty-three percent (43%) were formally employed, while 29% were informally employed. Forty-eight (48%) respondents were within medium to high income status and 18 were unemployed (Table 1).

Table 1 Socio-demographics of participants.

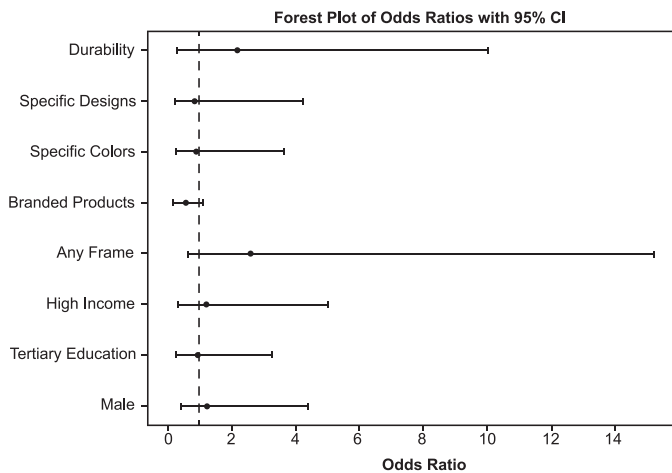
| Variable                  | Frequency | Percentage |
|---------------------------|-----------|------------|
| <b>Gender</b>             |           |            |
| Male                      | 45        | 45         |
| Female                    | 55        | 55         |
| Total                     | 100       | 100        |
| <b>Age Group</b>          |           |            |
| 18-24                     | 19        | 19         |
| 25-34                     | 33        | 33         |
| 35-44                     | 15        | 15         |
| 45-54                     | 9         | 9          |
| 55+                       | 18        | 18         |
| Unknown                   | 12        | 12         |
| Total                     | 100       | 100        |
| <b>Level of education</b> |           |            |
| No education              | 2         | 2          |
| Primary                   | 4         | 4          |
| JHS                       | 9         | 9          |
| SHS/Vocation/Technical    | 28        | 28         |
| Tertiary                  | 56        | 56         |
| Unknown                   | 1         | 1          |
| Total                     | 100       | 100        |
| <b>Income status</b>      |           |            |
| Low (690 and below)       | 26        | 26         |
| Medium (690-5110)         | 46        | 46         |
| High income (5110 above)  | 2         | 2          |
| Unknown                   | 26        | 26         |
| Total                     | 100       | 100        |
| <b>Employment status</b>  |           |            |
| Formally employed         | 43        | 43         |
| Informally employed       | 29        | 29         |
| Unemployed                | 18        | 18         |
| Retired                   | 6         | 6          |
| No response               | 4         | 4          |
| Total                     | 100       | 100        |

As shown in Table 2, majority (80%) of respondents liked optical frames and the choice of frames depended on multiple factors. However, from the Student T test analysis, only age was significantly associated with the choice of optical frames (p=0.00).

Table 2 Distribution of participant’s preference in features of frames

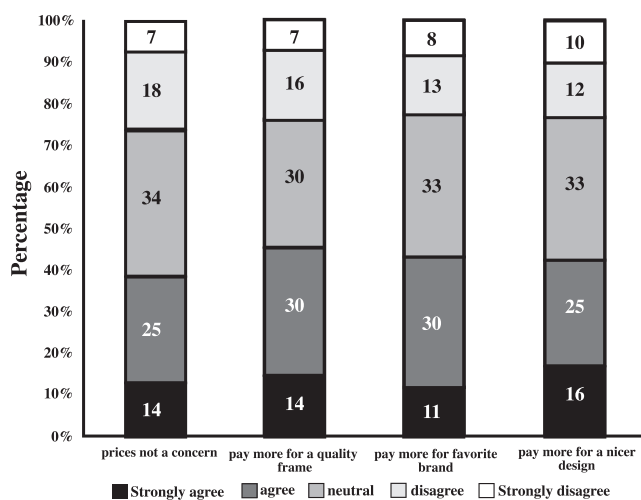
| Variable                                      | Frequency | Percentage |
|-----------------------------------------------|-----------|------------|
| <b>Do you like optical frames</b>             |           |            |
| Yes                                           | 80        | 80         |
| No                                            | 16        | 16         |
| No response                                   | 4         | 4          |
| Total                                         | 100       | 100        |
| <b>Will go for any frame</b>                  |           |            |
| Yes                                           | 64        | 64         |
| No                                            | 34        | 34         |
| No response                                   | 2         | 2          |
| Total                                         | 98        | 100        |
| <b>Look out for brand</b>                     |           |            |
| Yes                                           | 54        | 54         |
| No                                            | 43        | 43         |
| No response                                   | 3         | 3          |
| Total                                         | 100       | 100        |
| <b>Look out for color</b>                     |           |            |
| Yes                                           | 71        | 71         |
| No                                            | 28        | 28         |
| No response                                   | 1         | 1          |
| Total                                         | 100       | 100        |
| <b>Look out for design</b>                    |           |            |
| Yes                                           | 75        | 75         |
| No                                            | 23        | 23         |
| No response                                   | 2         | 2          |
| Total                                         | 100       | 100        |
| <b>Look out for durability</b>                |           |            |
| Yes                                           | 87        | 87         |
| No                                            | 11        | 11         |
| No response                                   | 2         | 2          |
| Total                                         | 100       | 100        |
| <b>Wearing a frame without a lens</b>         |           |            |
| Yes                                           | 32        | 32         |
| No                                            | 66        | 66         |
| No response                                   | 2         | 2          |
| Total                                         | 100       | 100        |
| <b>Look for other purposes</b>                |           |            |
| Yes                                           | 61        | 62         |
| No                                            | 37        | 37         |
| No response                                   | 2         | 2          |
| Total                                         | 100       | 100        |
| <b>To effectively maintain optical frames</b> |           |            |
| Yes                                           | 68        | 68         |
| No                                            | 30        | 30         |
| No response                                   | 2         | 2          |
| Total                                         | 100       | 100        |

Of factors associated with preference, the odd ratios (ORs) were higher in choosing any (2.6; 95% CI: 0.63-15.23) and durable frames (2.17; 95% CI: 0.26-10.03) than preference for specific colors (0.88; 95% CI: 0.24-3.63), designs (0.85; 95% CI: 0.22-4.23) or branded products (0.57; 95% CI: 0.16-1.09). Factors such as income level, education level or gender did not show statistically significant associations with the choice of optical frames. (Figure 1)



**Figure 1 Odds ratio using forest plots**

Respondents equally agreed or were neutral (30% each) concerning spending for a quality frame. However, they were more neutral (34%) on concerns about the price of optical frame (Figure 2).



**Figure 2 Assessment of features clients are willing to spend on**

## Discussion

The study highlights the factors affecting the choice of optical frames. The results show that the mean age of the respondents (36.1 years) was lower and 97% had at least primary education which were different from a previous study in another geographic area in the same country (mean age = 39.2 years, SD = 11.8 years) and 95% of the participants had at least basic education).<sup>11</sup> Eighty percent of our respondents, as compared with 91% of respondents in another study, like optical frames.<sup>2</sup> With regards to overall adoption, a study conducted in Ghana revealed that there was low spectacle coverage in the population, with most people not patronizing spectacles even when necessary.<sup>14</sup> The study highlights the critical need for educational initiatives aimed at addressing the widespread lack of awareness regarding the necessity of spectacles. While cost was identified as a significant concern, it is important to note that this study was not population-based, which limits the generalizability of its findings. Nevertheless, the data revealed that the cost of services remains a substantial barrier to the utilization of spectacles.<sup>14</sup>

The results indicate that respondents exhibited a neutral stance towards pricing, with a willingness to pay more for higher-quality frames. The mean willingness to pay for a more aesthetically pleasing design was average and moderate. This finding suggests a potential market for stylish and affordable eyewear, indicating that consumers are open to investing in products that combine quality with design. In contrast to findings from a European study, which noted that frame selection was influenced by various factors such as eye condition, face shape, skin tone, eye color, personality, and lifestyle, this study did not observe similar trends among its participants.<sup>14,15,16</sup> This discrepancy may highlight cultural differences in attitudes toward eyewear and the factors influencing purchasing decisions.<sup>13</sup> Additionally, a UK study found that only 3% of 1,074 individuals were inclined to undergo eye examinations, largely due to financial barriers.<sup>14,17</sup> This reluctance to invest in optical frames reflects a broader trend of unwillingness to prioritize eye care when faced with cost considerations.<sup>13,17,18</sup>

Overall, the findings suggest that there are significant differences in the factors affecting the choice of optical frames across various regions. While age plays a significant role in determining the likelihood of people taking optical frames, the cost of service and financial barriers can hinder the use of spectacles.

In conclusion, the findings of this study reveals the importance of further research to explore the specific factors influencing individuals' decisions regarding eye care. Future studies could benefit from a population-based approach to provide a more comprehensive understanding of the barriers

to spectacle utilization. Additionally, investigating the effectiveness of different educational strategies could help identify the most impactful methods for raising awareness about the importance of eye health. Education and promotion are necessary to address the lack of awareness about the need for spectacles, and the willingness to pay more for quality frames is a key factor in the choice of optical frames.

### Conflict of Interest

The authors declare that they have no competing interest.

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