



ASSESSMENT OF KNOWLEDGE, ATTITUDES AND PRACTICES OF COMPLIANCE TOWARDS CONSERVATIVE AMBLYOPIA THERAPY AMONG INDIAN MOTHERS IN RURAL AREAS

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ABSTRACT

**Objective:** To evaluate the knowledge, attitude and practice (KAP) of compliance towards conservative amblyopia therapy (optical correction and occlusion patching) among Indian mothers in rural areas.

**Methods:** A structured questionnaire was administered to 45 mothers, whose children had been diagnosed with amblyopia and undergoing conservative treatment, within the stipulated study period. The responses were consequently mapped against demographic profiles. **Results:** Among the 45 mothers, 40% were graduates while 44% were engaged in outdoor occupations. The Knowledge scores were significantly higher in educated (p=0.0018) and working women (p=0.0026). Earlier detection and presentation to the nearest healthcare practitioner were seen among educated groups (p=0.007). Higher education was also linked with positive attitudes (p=0.0001) and practices (p=0.02) towards initiation and continuation of therapy. There was, however, a severe deficiency in awareness about the detection and follow-up of amblyopia among all groups. **Conclusion:** There is a need for spreading awareness about the need for optical assessment of children. Knowledge about the need for continuation of treatment is scarce. Parental counseling and psychosocial need assessment are required to ensure adequate compliance with amblyopia therapy.

**KEYWORDS :** amblyopia, KAP, glasses, compliance, occlusion, awareness

INTRODUCTION

Amblyopia is a condition characterized by unilateral diminution of vision, when one eye has much better focus than the other. It starts in childhood and is the most common cause of vision loss in kids.

The mainstay of treatment for amblyopia has been based on increasing visual stimulation of the amblyopic eye by occlusion, atropine, or optical penalization of the dominant eye, after adequate refractive correction.<sup>[1]</sup> Treatment efficiency declines with age; and remains challenging, mainly due to compliance issues and suboptimal treatment outcomes during occlusion and atropine penalization. It has been found that adherence to occlusion affects the outcome, as a dose-response relationship exists between adherence and visual acuity.<sup>[2]</sup>

MATERIALS AND METHODS

Study Pattern

Retrospective Questionnaire – based Cross-sectional Study, per the ethical principles as laid down by the Helsinki Declaration, after approval from the hospital's research and ethics committee.

Developing The Kap Questionnaire

A structured questionnaire was developed, wherein the initial part of the questionnaire focussed on the symptomatic presentation and clinical aspects of the amblyopia cases, and the demographic distribution of the mothers. The KNOWLEDGE part of the questionnaire focussed on the basic recognition of the symptoms and presentation to the healthcare professional. The ATTITUDE section focussed on the determination and attitude of the mother towards the prevention and treatment of amblyopia, while the PRACTICES section focussed on the compliance and follow-up practices of the mother and child.

Sampling

A sample size of 45 mothers of children diagnosed with amblyopia ('lazy eye') was chosen in the study period of three months (January 2023 to March 2023) and the methodology was explained in detail. The questionnaire was provided and their responses were carefully mapped and analyzed.

Data Analysis

The responses were analyzed qualitatively and compared with their demographic data, to obtain a statistical analysis of

the community mindset towards the diagnosis and treatment of amblyopia, after applying the adequate parametric and non-parametric tests.

RESULTS

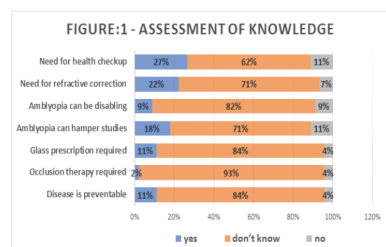
A sample size of 45 mothers was taken, out of which 18 (40%) were graduates, while 27 mothers (60%) were non-graduates. 20 (44.4%) of them were working mothers, engaged in outdoor occupations, while 25 (55.5%) were homemakers.

Assessment Of Clinical Profile

The clinical presentation of the child and the history was compared among demographic variables and a positive correlation was found among early presentation of symptoms and detection with higher levels of education and awareness. The responses were mapped as shown in TABLE 1.

TABLE: 1. CLINICAL PROFILE AND CORRELATION WITH DEMOGRAPHIC FACTORS

PARAMETERS	YES	NO	EDUCATION	WORKING
Noticed symptoms in child	66.6% (30)	33.3% (15)	P=0.02 (significant)	P=0.24 (not significant)
a. Eye rubbing	12			
b. Dimness of vision	24			
c. Deviation of eye	13			
d. Squinting of eye	12			
e. Others	9			
Mothers found the symptom bothersome	93.3% (28)	6.7% (2)		
Review at a healthcare center				
a. Early (< 1 month)	40% (18)		P=0.007 (significant)	P=0.03 (significant)
b. > 1 month of onset	60% (27)			

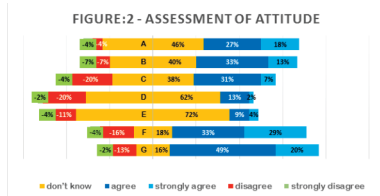


**Assessment Of Knowledge About Amblyopia**

Most of the mothers were unaware of the clinical profile, and the maximum responded with a neutral response ('don't know')(FIGURE: 1). Each positive response was marked with a numerical value of (+1), 'don't know' was designated with value 0 and negative response with a value of (-1). Students' t-test was applied to education groups (graduate and non-graduate) and occupation groups (working and homemaker) and results were tabulated as below (TABLE: 2).

TABLE:2 – CORRELATION BETWEEN KNOWLEDGE VARIABLES AND DEMOGRAPHIC PROFILE

GROUP	GRADUATE	NON-GRADUATE	WORK	HOME
MEAN	5.50	3.56	4.40	3.86
SD	0.86	0.70	0.68	0.58
SEM	0.20	0.13	0.15	0.12
N	18	27	20	25
p-value	P=0.0018		P=0.0026	



**Assessment Of Attitude About Amblyopia Diagnosis And Treatment**

Among the 45 mothers studied, the attitude towards the need for the different modalities (glasses and occlusion therapy) were mapped and plotted as a Likert scale graph, as below (FIGURE: 2). Scores were allocated to each opinion from +1 to +5, based on the Likert scale response, +1 for strongly disagree and +5 for strongly agree. The cumulative scores (out of 35) were compared to demographic variables and were found to be significant (TABLE 3).

TABLE:3 – CORRELATION BETWEEN ATTITUDE VARIABLES AND DEMOGRAPHIC PROFILE

GROUP	GRADUATE	NON-GRADUATE	WORK	HOME
MEAN	28.11	24.56	26.50	20.60
SD	2.11	1.48	2.56	1.41
SEM	0.50	0.28	0.57	0.28
N	18	27	20	25
p-value	P=0.0001		P=0.003	

**KEY**

- A – Need for treatment of amblyopia
- B – Need for refraction testing
- C – Compliance with prescribed glasses
- D – Need for patching
- E – Compliance with patching therapy
- F – Need for follow up visits
- G – Treatment reduces chances of amblyopia

**Assessment Of Practices For Amblyopia Diagnosis And Treatment**

Responses to the continuation of prescribed glasses and occlusion therapy for the treatment of amblyopia were mapped and were correlated with demographic variables; in both categories, the difference was found to be statistically significant (TABLE: 4). FIGURES 3 and 4 describe the reasons for discontinuation of prescription glasses and occlusion therapy respectively.

TABLE: 4 – ASSESSMENT OF PRACTICES AND CORRELATION WITH DEMOGRAPHIC VARIABLES

PARAMETER	YES % (n)	NO % (n)	EDUCATION (p-value)	OCCUPATION (p-value)
Continuation of prescribed glasses	51.1% (23)	49.9% (22)	P=0.01 (significant)	P=0.04 (significant)
Continuation of occlusion therapy	35.5% (16)	64.5% (29)	P=0.02 (significant)	P=0.05 (significant)

FIGURE:3 - REASONS FOR DISCONTINUATION OF GLASSES

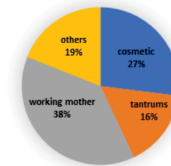
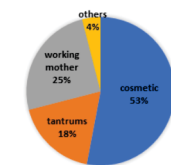


FIGURE:4 - REASONS FOR DISCONTINUATION OF OCCLUSION THERAPY



**DISCUSSION**

Modalities like optical correction and occlusion therapy (patching and pharmacological) have been demonstrated to be highly effective in restoring vision in the amblyopic eye, and are vastly inexpensive modalities. These treatments have been shown to improve the amblyopic eye's BCVA in most patients, although not all patients respond to treatment, and a portion of patients suffer from residual amblyopia.<sup>[3]</sup> One potential explanation for treatment failure or incomplete treatment response is non-compliance. Research has consistently shown poor patient compliance with treatment, with objectively measured compliance in trials (percent of the assigned treatment actually received), often clustering around 50%. Even though most patients in these trials display significant improvement in visual acuity despite poor compliance, compliance has been shown to have a well-established, dose-response link with visual acuity outcomes, and noncompliance likely contributes to the residual amblyopia experienced by many patients despite properly prescribed treatment.

Al-Zuhaibi et al (2009) studied 31 families, with children undergoing unilateral amblyopia treatment, and found that only 45% of patients showed good compliance to occlusion therapy while 55% of patients were non-compliant. Improvement in visual acuity strongly correlated with compliance with patching (P = 0.008). 32% of families expressed a desire for more information and 58% of parents did not understand that amblyopia meant decreased vision.<sup>[4]</sup> Another study by A Searle (2002) revealed that only 54% of parents were achieving orthoptists' recommendations to patch their child. Perceived self-efficacy was positively associated with compliance and perceived prohibition of the child's activities were negatively associated with compliance.<sup>[5]</sup> A study by M Dixon-Woods et al (2006) sought to explore parents' perceptions and experiences of occlusion (patching) therapy for the treatment of amblyopia in children. The study found that parents were highly sensitive to the credibility of the treatment, but were sometimes confused by information given in the clinic or did not see clinic staff as authoritative. There was evidence that parents were likely to abandon or modify treatment if no improvement could be detected or if the child continued to suffer socially or educationally.<sup>[6]</sup> Dean SE et al (2016) further re-iterated that Interventions to increase patching compliance should include educational elements.<sup>[7]</sup> High-quality research is needed to further assess the effectiveness of specific elements of educational interventions and additional behavior change techniques.

In this study, knowledge, attitude and practice variables were compared against demographic profiles to assess a

correlation between the two. Clinical presentation was found to be earlier in educated groups ( $p=0.02$ ) and those with working mothers, as awareness, played a major role in the early detection of symptoms. Knowledge attributes were significantly higher in educated ( $p=0.0018$ ) and working mothers ( $p=0.0026$ ); the study shows that awareness related to the development of amblyopia is severely lacking. Attitude profile towards the use of prescription glasses and occlusion therapy was also lacking, with the majority of responses being 'neutral' regarding the need and compliance of the same. A significant positive correlation was found between attitude responses and educated mothers ( $p=0.0001$ ) and working mothers ( $p=0.003$ ). Positive responses towards the practice of continuing glasses and patching were more prevalent amongst educated ( $p=0.01$  and  $p=0.02$  respectively) and working mothers ( $p=0.04$  and  $p=0.05$  respectively). Follow-up visits were found to be more frequent among educated ( $p=0.012$ ) and working ( $p=0.036$ ) mothers.

A study by Wallace MP et al (2013) compared 152 patients diagnosed with amblyopia and found that the mean compliance was 44%, and the mean proportion of days with no patch worn was 42%.<sup>[8]</sup> Compliance was lower (39%) on weekends compared with weekdays (46%,  $P = 0.04$ ). Compliance was lower when attendance was less frequent ( $P < 0.001$ ) and with prolonged treatment duration ( $P < 0.001$ ). In this study, 25% of participants exhibited low or poor compliance (less than 20% of the prescribed dose). This is consistent with the general body of data on compliance rates that suggests poor compliance is expected in 30% to 50% of individuals regardless of the disease, prognosis, or type of medicines.<sup>[9]</sup>

Emotional impact<sup>[6,10,11]</sup> and poor parental understanding<sup>[12]</sup> seem to be important factors affecting compliance with occlusion therapy. In a randomized clinical trial Loudon et al.<sup>[13]</sup>, and Tjiam et al.<sup>[14]</sup> demonstrated that an educational program, consisting of a cartoon story explaining to the child, without text, the rationale for treatment, together with a calendar and reward stickers, and an information sheet for parents, was effective in improving compliance for those that were likely to not dose at all or would have had very low compliance. Age, sex, type and severity of amblyopia, and previous improvement seem not to affect compliance.

The current study shows that the severe lack of knowledge and awareness of the 'seemingly benign' disease and socio-psychological factors play a huge role in determining compliance and follow-up of amblyopia patients. There is an active need for better screening and parental counseling, keeping in mind the social and psychological variables that determine compliance.

## CONCLUSION

Amblyopia therapy relies heavily on patient compliance and frequent follow-ups, which are found to be deficient. Lack of parental awareness and other psychosocial factors need to be addressed to ensure compliance and to decrease the incidence of residual amblyopia.

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**Conflicts Of Interest:** NONE

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