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Attitudes towards contact lenses: A comparative study of teenagers and their parents

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ABSTRACT

Purpose: This two-phase survey aimed to identify the beliefs and attitudes that create a barrier towards contact lens (CL) fitting among adolescents (aged 12–18 years) and their parents attending eye care practitioner clinics in Italy (phase 1) and Iberia (Spain and Portugal; phase 2). In phase 2, the sample was further focused, by limiting it to those adolescents who did not already wear CL.

Methods: The extent to which CL satisfy aesthetic, visual, and practical needs and their effectiveness, safety, and comfort in the general population and in adolescents was rated by respondents on a 5-point Likert scale.

Results: In phase 1, approximately one-third of adolescents ($n = 146$) and parents ($n = 114$) were CL wearers. Most adolescents (77.5% of 223) and parents (66.2% of 230) expressed a high interest in CL use in phase 2 despite none of the adolescents currently wearing CL. Parents, but not adolescents, perceived that CL were significantly less safe in adolescents than in the general population ($p < 0.05$) in phases 1 and 2. Across both phases, adolescents and parents agreed that CL met an aesthetic need in adolescents ($p < 0.05$ versus general population). Among 50% of parents (mainly mothers), significant concerns regarding CL were difficulties following instructions and taking care of the CL and potential eye damage, which, in mothers, led them to show less agreement towards CL use by the adolescent ($p < 0.001$).

Conclusions: These findings highlight an essential need for improved education on CL use in the population.

1. Introduction

Correctable visual impairment is common among children and adolescents, with 25.4% of 6–18 years old in the US and 27.5% of 16–24 years old in the UK, Italy, France, and Germany reported to require visual correction [1,2]. Evidence supports contact lenses (CL) as an effective, safe, and convenient treatment modality for refractive errors in children and adolescents [3,4]. Moreover, recent studies reported significant improvements in the quality of life and self-perception (physical appearance, athletic competence, and social acceptance) of children (8–12 years of age) and adolescents (13–17 years of age) following refractive correction with CL when compared with glasses [5,6]. Despite these findings, only a fraction (27.9%) of those adolescents who are eligible to wear CL use this option in European countries [1].

It is evident that illness beliefs can strongly influence health-related behaviour [7,8], including those of subjects requiring visual correction [9,10]. Such observations imply that a successful person-centered approach in CL practice requires an understanding of the potential user's beliefs. Few studies to date have evaluated the issues surrounding CL use in adolescents. From analyses in other healthcare fields, it is apparent that parents' attitudes and beliefs exert a significant impact on adolescent health-related behaviour. For example, parental influence can reinforce non-smoking decisions and shape positive or negative eating habits [11–14]. Given the requirement for parental consent when initiating corrective treatment with CL, the beliefs and attitudes of parents are likely to influence the use of CL in adolescents.

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Therefore, the objective of this two-phase survey was to understand and clarify the beliefs and attitudes that could create a barrier towards CL fitting among adolescents and their parents in European countries.

2. Methods

This two-phase study was conducted in adolescents and their parents attending Eye Care Practitioner (ECP) clinics in Italy (phase 1; 2008) and Iberia (Spain and Portugal; phase 2; 2009). Results from the preliminary phase 1 of the study in Italy were used to inform and guide the design of the phase 2 evaluation in Iberia.

The study was designed to address the following primary questions:

- Is there a real interest for CL wear among adolescents?
- Could parents' opinions be a barrier to the use of CL by teenagers?
- According to parents and adolescents, which beliefs about CL could be barriers to CL wear in adolescents?
- Are the ECPs providing enough information about CL to the adolescents and parents?
- Does the parents' experience of CL influence adolescent opinion?

2.1. Study population

Adolescents (between 12 and 18 years of age) and their parents were included in both phases of the study. While both phases of the study included adolescents visiting ECP clinics, the sample population in phase 2 was limited to those not wearing CL. Institutional review board approval or informed consent was not required, as respondents were already patients in optical outlets, optometry or ophthalmology clinics that participated in the study.

2.2. Questionnaire

Beliefs and attitudes towards CL in adolescents and parents were evaluated using an 11- and 13-item questionnaire, respectively, in phase 1 of the study. The questionnaire was designed to capture opinion on the extent to which CL satisfy aesthetic, visual, and practical needs as well as respondents' attitudes regarding the effectiveness, safety, and comfort of CL in the general population (the opinions and the attitudes were measured through questions that did not take into consideration a particular age) and in adolescents (in this case the questions requested a specific opinion relating to adolescent). For these questions, respondents rated their answers on a 5-point Likert scale that ranged from 1 (completely disagree) to 5 (completely agree). Additional questions evaluated visual correction preferences (glasses, CL, both CL and glasses, refractive surgery); objection to a specific type of CL (disposable, rigid gas permeable [RGP], or soft conventional); respondent behaviour in the event that they expressed a willingness to wear CL (consult an ophthalmologist, consult an optometrist, consult both an ophthalmologist and an optometrist, buy CL from an optician outlet, or buy CL from a chemist outlet); and parental consent with respect to their child's use of CL (from 1 [completely disagree] to 5 [completely agree]). Demographic information was also collected in the initial section of the questionnaire.

A modified version of the questionnaire was utilised in phase 2 of the study, which incorporated additional questions on concerns with CL use and CL practices of ECPs. Overall, questionnaires distributed to adolescents and parents in phase 2 comprised 30 and 18 items, respectively. All questionnaires in each study phase were completed anonymously and self-reported.

3. Statistical analyses

Analyses of responses from adolescents and parents are presented descriptively. However, specific pair-wise comparisons of responses (general population versus adolescents; CL wearers versus non-wearers) were undertaken using the Mann–Whitney *U* and Wilcoxon Signed Ranks tests for categorical and continuous variables, respectively. Spearman's Correlation Coefficient and Mann–Whitney tests were utilised to calculate the strength of the relationship between age or gender (parents) and response ratings. Statistical significance was accepted at $p < 0.05$.

4. Results

4.1. Phase 1 (Italy)

A total of 146 adolescents (mean age [±SD] 15.4 ± 2.2 years; 86 females and 60 males) and 114 parents (mean age 46.5 ± 6.3 years; 59 females and 59 males) participated in the preliminary phase of the study. In total, 63% of the adolescent study population had refractive errors. Among adolescents and parents, approximately one-third of each population were CL wearers (50 [34.2%] and 41 [36.0%], respectively).

Parents' attitudes towards CL wear differed according to the population under consideration (general population or adolescents) whereas opinions among adolescents were similar irrespective of the population considered (Figs. 1 and 2). As shown by mean agreement scores, parents perceived CL as significantly less effective, comfortable, and safe, and significantly less able to meet visual and practical needs in adolescents than in the general population (all $p < 0.05$; Fig. 2).

Both adolescents and parents agreed that CL met an aesthetic need in the adolescent population (Figs. 1 and 2).

The majority of adolescents (66%) and parents (65%) expressed a preference for both CL and glasses. Overall, 25% and 30% of

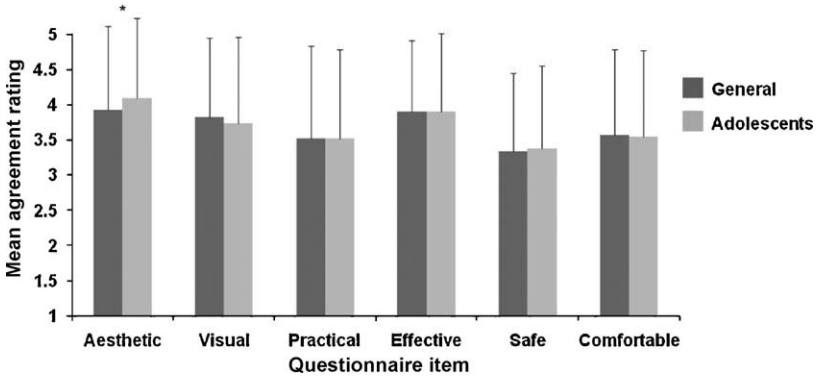

Fig. 1. Attitudes towards contact lens use among adolescents in phase 1 (mean agreement rating ± SD). Pair-wise comparisons of the general population versus adolescents did not reach significance for 5 questionnaire items. Only the first comparison relating to the 'aesthetic need' was significant (Wilcoxon paired test; $^{*}p < 0.05$).

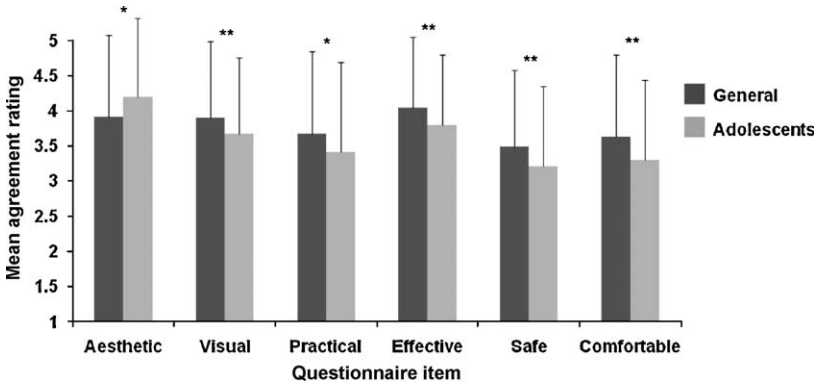

Fig. 2. Attitudes towards contact lens use among parents in phase 1 (mean agreement rating ± SD). Pair-wise comparisons of the general population versus adolescents were significant for all questionnaire items (Wilcoxon paired test; $^{*}p < 0.01$; $^{**}p < 0.005$).

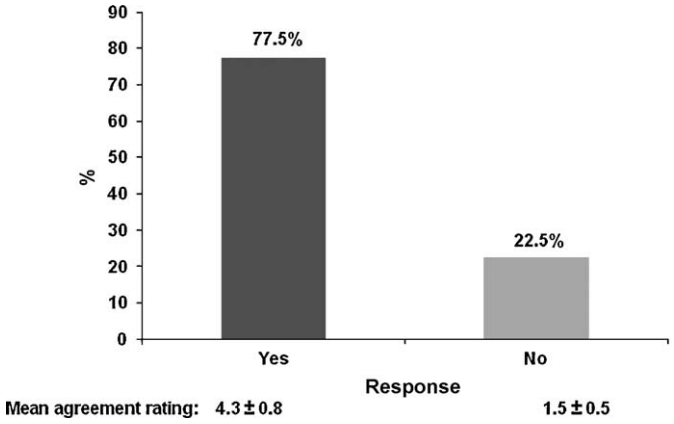

Fig. 3. Interest in contact lens use in adolescents (phase 2).

adolescents and parents, respectively, did not favour disposable CL while 25% and 20% objected to RGP, and 21% and 13% to soft conventional CL.

The overall parent population demonstrated high agreement towards the fitting of CL in adolescents (mean agreement rating [±SD]: 3.6 ± 1.1). Agreement with respect to satisfying a request for CL was higher among parents who wore CL than non-wearers (mean agreement rating: 4.0 ± 1.0 versus 3.4 ± 1.1; $p < 0.05$). These results were not influenced by the age or gender of parents (not significant).

4.2. Phase 2 (Iberia)

In total, 223 adolescents who were not CL wearers and were visiting an optical outlet, optometry or ophthalmology clinic (mean age [±SD]: 14.7 ± 1.9 years; 115 females and 108 males) and 230 parents (mean age 44.3 ± 5.5 years; 152 females and 72 males) completed questionnaires in phase 2.

4.2.1. Adolescents

The majority of adolescents reported that they wore glasses (88.3%), which was primarily to correct for myopia (46.8%) or myopia and astigmatism (29.6%).

A significant proportion of adolescents (77.5%) expressed high interest in wearing CL (mean [±SD]: 4.3 ± 0.8; Fig. 3) despite not currently wearing them.

Adolescents were in agreement that CL were comfortable, effective, and safe as well as meeting practical, visual, and aesthetic needs for both the general population and adolescents (Fig. 4).

Comfort when playing sports (65.9%), confidence about their appearance (58.7%), and ease of movement (43.9%) were the main reasons cited by adolescents for their consideration of CL as the best option. Conversely, adolescents reported difficulty inserting the CL (54.2%; $p < 0.001$), discomfort (34.5%), and potential damage to the eye (33.6%) as their main concerns regarding CL use (Fig. 5). Lack of an optometrist or ophthalmologist recommendation was not a significant concern when considering CL (Fig. 5).

4.2.2. Parents

Almost half of all parents required visual correction (45.2%). Of these, 73.0% wore only glasses, 19.0% both glasses and CL, and 8.0% CL only.

A high proportion of parents (66.2%) answered that they were willing to satisfy a request from their child to wear CL (Fig. 6). Parents perceived that CL were less safe for use by adolescents compared with the general population, as demonstrated by lower

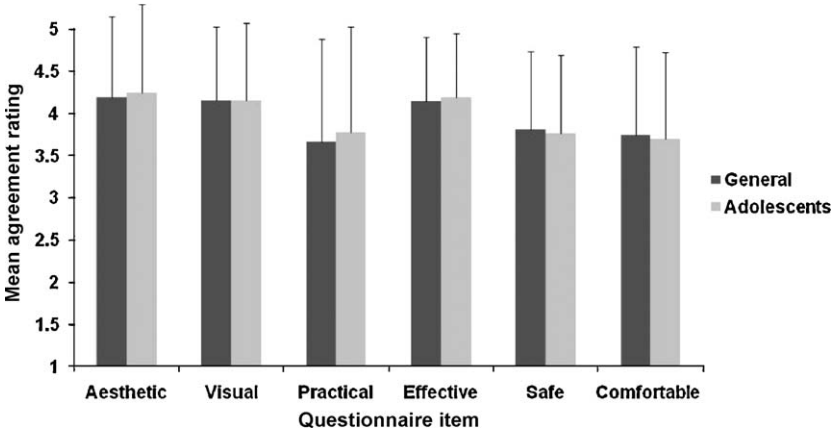

Fig. 4. Attitudes towards contact lens use among adolescents in phase 2 (mean agreement rating ± SD). Pair-wise comparisons of the general population versus adolescents did not reach significance for any questionnaire item.

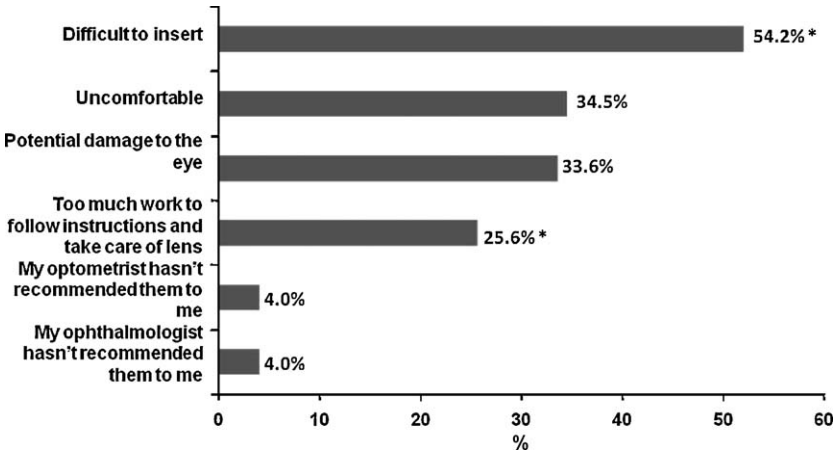

Fig. 5. Concerns regarding contact lens use among adolescents (phase 2). Pair-wise comparisons were significant for 'difficulty to insert' versus 'uncomfortable' and 'difficulty following instructions/taking care of the lens' versus 'optometrist has not recommended them to me' (Wilcoxon paired test; $^{*}p < 0.001$).

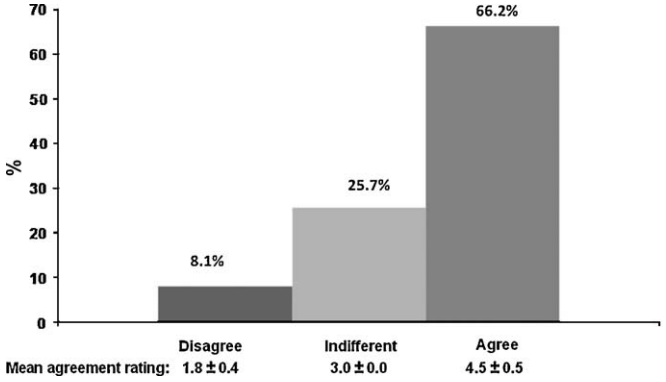

Fig. 6. Parental attitudes towards satisfying a request for contact lenses from adolescents (phase 2).

mean agreement scores (Wilcoxon test = 3.549; $p < 0.001$; Fig. 7). On the other hand, parents were in high agreement that CL satisfy an aesthetic need in adolescents (Wilcoxon test = 4.258; $p < 0.001$ versus the general population; Fig. 7).

Among parents, difficulties following instructions and taking care of the CL (50.4%; $p < 0.01$), potential damage to the eye (50.0% $p < 0.01$), and difficulty with insertion (33.9%; $p < 0.01$) were major concerns ascribed to CL use among adolescents. Lesser concerns were discomfort (20.0%; $p < 0.05$) and lack of a recommendation by an ophthalmologist (12.6%) or optometrist (7%).

In the main, mothers accompanied adolescents to the eye examination (67.3% versus 16.4% of fathers). Moreover, approximately two-thirds of adolescents (64.7%) identified their mother as the main decision maker involved in selecting the type of visual correction they would use. Mothers showed less agreement towards the use of CL if they perceived that the adolescent would experience difficulties following instructions and taking care of their CL (mean agreement score: 3.6 versus 4.2 for no difficulties; Mann–Whitney U-test = 3.958; $p < 0.001$).

4.2.3. Eye care practitioners

Overall, 46.3% and 39.0% of adolescents had visited an ophthalmologist or optometrist, respectively, for the initial eye examination that led to the confirmation of their need for visual correction. However, only 27.8% of the adolescents who consulted an ophthalmologist reported a recommendation for CL compared with 40.4% of those who consulted with an optometrist ($p < 0.001$).

5. Discussion

This two-phase study highlights findings that are somewhat paradoxical in that adolescents exhibited a high interest in wearing CL and parents responded that they were clearly in favour of its use, but the low proportion of adolescents using CL in Europe indicate that there remain significant barriers to CL use in adolescents.

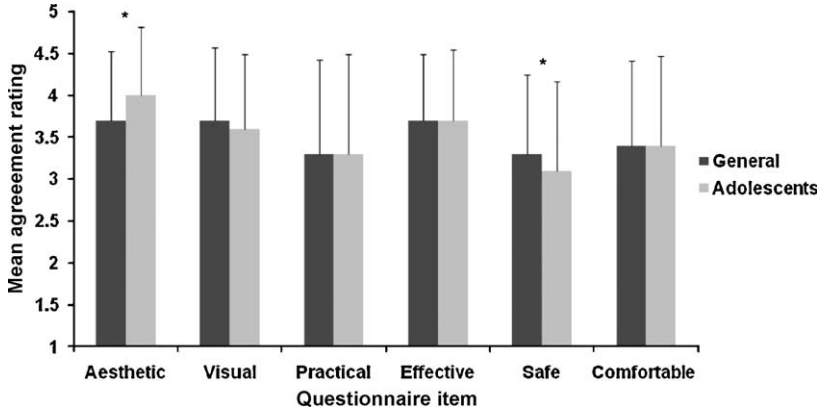

Fig. 7. Attitudes towards contact lens use among parents in phase 2 (mean agreement rating ± SD). Pair-wise comparisons of the general population versus adolescents were significant for questionnaire items relating to the 'aesthetic need' and 'safety' of contact lenses (Wilcoxon paired test; $^{*}p < 0.001$).

A limitation of the phase 1 study conducted in Italy was the high proportion of CL wearers in the adolescent and parent groups. However, in phase 2 of the study, current CL use was an exclusion criterion for adolescents entering the study, and only a small percentage of parents were documented CL wearers.

Results from the preliminary phase in Italy highlighted the key influence of parental CL wear on the willingness of the parent to satisfy a request for CL from their adolescent. Also notable was the emergence of data showing a significant barrier towards disposable CL use among parents and adolescents in this preliminary phase (30% and 25% expressed an objection to disposable CL, respectively), which suggests respondent misunderstanding towards the true advantages that disposable CL can offer in terms of safety to the wearer. A challenge for ECPs is to clarify this point for their patients.

The design of the questionnaire was modified in phase 2 to address additional barriers to CL uptake. Although 77.5% of surveyed adolescents were interested in wearing CL and 66.2% of parents declared they would support their teens' request, none of the adolescents surveyed wore CL.

Across both phases of the study, responses to questions not addressed specifically to assess the acceptance or otherwise of CL use by their children showed that parents perceived CL to be less safe for adolescents than for the general population and that they believed CL met mainly an aesthetic need in adolescents.

Half of all parents (mostly mothers) considered CL to be a source of potential damage to the eye. Such a high occurrence of negative beliefs despite considerable progress in safety due to continuing improvements achieved in the materials and designs of CL and due to the existence of different patterns of use, replacement and maintenance systems that further optimise their use, brings to our attention that there is a significant failure in the field of communication. A large proportion of parents of adolescents do not have accurate and updated information on this type of optical compensation. Moreover, 50% of parents believed that the adolescent would experience difficulty in following instructions and taking care of their lenses, which, in mothers, led them to show less agreement with regard to satisfying a request for CL by their child.

In phase 1, the majority of adolescents (82%) and parents (89%) indicated that they would consult an ECP (optometrist or ophthalmologist) when considering CL as a treatment option. Therefore, these results suggest that the attitudes of the ECPs can have a significant bearing on CL use, which could therefore enable them to inform adequately and efficiently about the benefits, precautions and risks of wearing CL. However, phase 2 study findings in Iberia showed that only 27.8% of the adolescents who consulted an ophthalmologist reported a recommendation for CL and, although optometrists are more likely to recommend CL than ophthalmologists, in less than half of respondents (40.4%) surveyed did the optometrist mention CL as an option.

The Health Belief Model has been extensively employed to examine relationships between illness beliefs and health-related behaviour [10,15]. Using this model, it is envisaged that future research may be undertaken in eye care practices to investigate in more detail parents' perception of vulnerability to CL-related ocular disease given that almost half of all parents in this study exhibited concerns regarding the risk of potential eye damage with CL. These views conflict with published evidence that supports a low incidence of CL-related disease [16]. In addition, published evidence supports that younger CL wearers do not have a higher risk of developing CL-related ocular disease [17–18], although a recent study rebuts this [19].

Overall, the findings from this study indicate that professional–patient communication and the dissemination of information on CL use to parents and teens should be improved as well as education on CL in the general population. This is consistent with a study that highlighted the prominent role of ECPs in influencing the healthcare practice of CL wearers [9].

Consequently, to optimise the use of CL, the results from this study have led to the following recommendations: (1) ECPs should provide parents with information on safety in order to overcome barriers and make them feel comfortable with their use in adolescents; (2) in some European countries, ECPs should receive training on CL wear (risks and benefits); (3) ECPs should provide practical demonstrations on the handling and fitting of CL to adolescents who are first-time users; and (4) ECPs should receive guidance to enable them to become more proactive in offering CL as a potential solution to refractive errors.

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