Development and validation of novel self-report questionnaire about the assessment of adolescents' relation to medicines use and risk
Príprava a validácia dotazníka pre hodnotenie vzťahu adolescentov k užívaniu a riziku lieku

Original research article

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Abstract Adolescents have a lack of experience, knowledge of medicines, which often leads to incorrect use of medicines. Slovak adolescents' attitude towards the use and risk of medicines is not known, and therefore, we prepared a questionnaire and then we evaluated the face, content (CVR i ≤1) and construct validity and reliability (Cronbach's α = 0.85). The questionnaire is an appropriate tool to assess the quality of knowledge and experience of adolescents with drugs and the data could, on the introduction of measures, contribute to the rational use of medicines by adolescents in Slovakia.

Slovak abstract Adolescenti nemajú dostatok skúseností a vedomostí o liekoch, čo vedie často k nesprávnemu užívaniu liekov. Postoj slovenských adolescentov k užívaniu a riziku lieku nie je známy a preto sme pripravili dotazník a následne sme vyhodnotili „face" a obsahovú validitu (CVR i ≤1), konštruktovú validitu a reliabilitu (Cronbachov koeficient α = 0,85). Vytvorený dotazník je vhodným nástrojom na posúdenie kvality vedomostí a skúseností adolescentov s liekmi a získané údaje by mohli po zavedení opatrení, prispieť k racionálnemu užívaniu liekov adolescentmi na Slovensku.

INTRODUCTION

Adolescents play an active role in the use of medicines. They start taking drugs on their own, and in the treatment of chronic diseases, they do not want parents to supervise them. Also they start attending pharmacies and self-medicate with over-the-counter (OTC) medicines (Darmanin Ellul et al., 2008, Shehnaz et al., 2014). Poor knowledge can lead to the improper use of commonly used medicines and adverse drug reactions (Thanoon et al. 2013, Eldalo et al., 2014). There has so far been published only a few works that analysed the questionnaire survey of adolescents' knowledge about drugs and their perceptions of the risk of pharmacotherapy (Siponen et al., 2014, Du et al., 2009). There is no information about adolescents' knowledge, attitude and practice of medicines in the Slovak Republic, which led us to develop and validate an assessment questionnaire called *Knowledge of medicines and perception of risk questionnaire* (KPQ).

MATERIAL AND METHODS

The KPQ was designed for use in the adolescents' community (12–18 years) in collaboration with a panel of three experts with expertise in pharmacy, psychology, statistics and questionnaire design. The questionnaire contained 23 multidimensional items, with closed-ended and open-ended questions. There was one specific item with seven questions about adolescents' perception of medicines and other specific item with eight questions to assess adolescents' knowledge about the administration of medicines with responses recorded

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Table 1. Reliability of questionnaire expressed by Cronbach's α

Dimension	Knowledge of the use of medicines	Risk perception of medicines	Attitude to the use of medicines	All dimensions
Cronbach´s coefficient α	0.82	0.75	0.83	0.85

on the 'Likert-type scale'. The face and content validity of novel self-reported questionnaire were assessed collaborating with seven experts pharmacists from the Faculty of Pharmacy of the Comenius University in Bratislava and the State Institute for Drug Control. The validity and reliability of the final KPQ was carried out using a cross-sectional and analytical study with PSPP 0.7.9. The KPQ was distributed by pharmacists to adolescents (n = 930) in 12 community high schools that covered all parts of Slovakia, following selection criteria.

RESULTS

The first non-empirical assessment of the questionnaire, called face validation, demonstrated the significance of each item. Content validity establishes the relationship amongst the nature of all 36 questions. It is focused on the research tool and is expressed by content validity index (CVR i). The values of content validity index were CVR i = 1 (14 item), CVR i = 0.72 (18 item), CVR i = 0.43 (3 item) and CVR i = 0.14 (1 item) (Figure 1). The construct validity, through a factor analysis with varimax rotation, confirmed final KPQ two specific items in 'Likert-type scale' over three dimensions: knowledge of the use of medicines, perception of medicines risk, and attitude to the use of drugs which extracted together 73.77% of variance. The reliability determines the accuracy and reliability of 15 specific questions with 'Likert-type scale' using Cronbach's coefficient (α), which was 0.85 for the KPQ and 0.83, 0.75 and 0.82 for dimensions, respectively (Table 1).

DISCUSSION

We focused on the preparation and validation of the research tool intended to provide the information on medicinal products in relation to the pharmacotherapy in adolescents and perception of the medicines risk, which would suit the measurement conditions in the Slovak Republic. We decided to evaluate the face, content, construct validity and reliability (Halim et al., 2010). Face validity is assessed by experts, such as clinicians, patients or researchers, who review the contents of the test to see if the items seem appropriate. Content validity expect the use of recognised subject matter experts to evaluate whether test items assess defined content and more rigorous statistical tests than does the assessment of face validity. Construct validity indicates the ability of an instrument to measure an abstract concept, or construct. Reliability is the degree to which an assessment tool creates stable and consistent results (Halim et al., 2010, Sushil et al.,
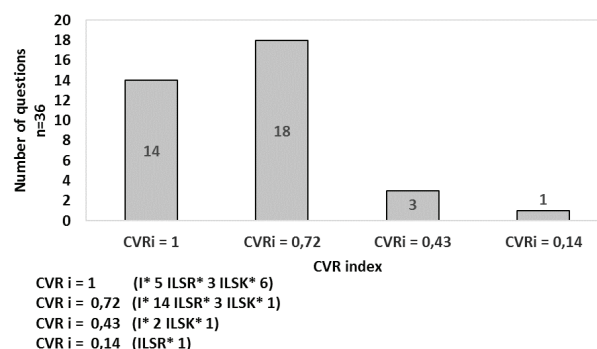

CVR i = 1   (I* 5 ILSR* 3 ILSK* 6)
CVR i = 0,72   (I* 14 ILSR* 3 ILSK* 1)
CVR i = 0,43   (I* 2 ILSK* 1)
CVR i = 0,14   (ILSR* 1)

Figure 1. Content validation expressed by content validity index (CVR i). I*, item number; ILSR*, item with 'Likert scale' about perception of medicines risk and attitude to the use of drugs number; ILSK*, item with 'Likert scale' about knowledge of the use of medicines number

2010). Throughout the assessment of face validity, we found out that individual items of the questionnaire are important for obtaining results. The content validation had positive validity (CVR i ≤1). This means that more than half of experts considered the relevant item (Olave Quispe et al., 2011). Therefore, the content of research instrument corresponded to that questionnaire. Within evaluating construct validity, we determined that there are three dimensions to the total variation of 73.77%. The resulting dimensions pursue the objective of research and have adequate overall variation. This implies that we created a questionnaire according to the theory, which fills our construct. We can find different numbers of dimensions with their associated total variation in papers dealing with the issues of validation questionnaires (Siponen et al., 2014, Halim et al., 2010, Olave Quispe et al., 2011, Morales-Suárez-Varela et. al., 2009). We can conclude that there is an adequate standard of construct validity. Reliability research tool using Cronbach's α as 0.85. In each work, the result is regarded as acceptable when value is higher than 0.7 (Halim et al., 2010). Accordingly, our research tool has good internal consistency. The survey results indicate that the questionnaire is clear and a valid research tool. Preparation of the questionnaire will provide new data in this area, which will contribute to reducing the risks of pharmacotherapy and result in improved effectiveness of medication for adolescents.

CONCLUSION

We present the self-report questionnaire which is an effective instrument to assess the knowledge of medicines amongst

adolescent. This tool appears to be a starting point in the development of future research to understand more about the improvement in the use of medication in adolescents in the Slovak Republic. It is extremely important that adolescents should be aware of the problems that the use of medicines entails.

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