

Questionnaires for asthma in children: written or video?

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Childhood asthma is widely recognised as a major health problem both in industrialised and in developing countries [1]. The study of the epidemiological aspects of the disease is crucial for identification of potential risk factors to develop appropriate prevention strategies, and for assessing the burden of the disease to deploy adequate health care interventions [2]. Since symptoms of asthma are often easy to identify, questionnaires have always been the major tool used to collect information on the epidemiology of this condition [3]. However, the understanding of a written description of asthmatic symptoms varies widely across different languages and cultural groups, limiting the usefulness of questionnaires when comparing populations with different backgrounds. In particular, the word "wheezing", which is largely used to identify asthmatic symptoms in English speaking countries, has no equivalent in many languages. Furthermore, different groups from the same language may use different word to describe the same symptom [4]. To overcome these difficulties, the ISAAC steering committee, when planning an international survey on the prevalence of asthma, proposed a video questionnaire, containing five scenes depicting children with different "typical" symptoms of asthma [3]. The rationale, was the assumption that the visual language would render more homogeneous the understanding of the questions and possibly would help to better identify asthmatic symptoms as compared with a conventional written questionnaire [5]. Verification of this basic assumption would require a direct comparison of the sensitivity and specificity of the two questionnaires in groups with similar clinical characteristics but different language, a task which has never been attempted. Nevertheless, the video questionnaire has been validated in relatively small studies using bronchial hyper-responsiveness [6-10] and clinical diagnosis of asthma by an expert [11] as the gold standard.

Despite having been widely used in the ISAAC phase I study, the video questionnaire never really gained popularity, mainly because it was soon apparent that the prevalence of symptoms reported using the video questionnaire is lower than with the written questionnaire and that the agreement be-

tween the two questionnaires is poor in most centres [12-14]. So, despite any clear evidence that symptoms reported with the written questionnaire are more associated with asthma or are less biased compared with the video, the latter was not used in the phase II of the ISAAC and, although still recommended, it was not a mandatory requirement in the phase III of the study [2].

In the present issue of the Monaldi Archives, two groups; one from Iran and one from Mozambique present data on the epidemiology of childhood asthma in their countries, comparing the ISAAC video and written questionnaires [15-16]. Like most of previous reports using these instruments, they found that the video questionnaire provided lower symptom prevalence estimates than the written one (although this does not seem to occur for some questions in Mozambique), and that the agreement between the two questionnaires was poor. What is the value of this data, and what does the data tell us?

One of the most popular hypothesis to explain the lower report of wheezing symptoms of the video questionnaire is that it would only identify the more severe cases of asthma [12, 14]. The data from Mozambique [16] strongly suggests that this is not the case, as no difference has been found in the prevalence of video-reported symptoms between rural and urban areas, whereas the written questionnaire indicated more severe forms of asthma in the latter. A more likely explanation is that the sensitivity of the video questionnaire is just lower than anticipated in preliminary validation studies. These were mostly conducted using hyper-responsiveness as the gold standard, but the correlation of this parameter with childhood asthma can be poor [17]. Indeed, the only study using clinical diagnosis of asthma as the gold standard provided a quite less optimistic estimate of the sensitivity of the video questionnaire [11]. Several reasons could explain a low sensitivity of the video questionnaire. First, patients with asthma experiment an "inner" sensations, which could be difficult to identify on a video scene, as their body self image could be quite different from the real appearance [18, 19]. Furthermore, most parents of children with asthma have problems identifying wheezing episodes on

video [20] and only about 50% of a group of physicians from India correctly identified wheezing scenes in the ISAAC questionnaire [21]. It seems unrealistic to expect children to perform better than parents or physicians. Finally, unfamiliarity with the terms used in the written questionnaire could cause uncertainty in the children, leading to over-reporting of symptoms with this instrument [22]. This could be the reason for the difference observed between video and written questionnaires in the study from Iran [15], where the report of a diagnosis of asthma was much closer to the prevalence of wheezing detected by the video than by the written questionnaire [15]. Interestingly, the difference between the two questionnaires appears to be much smaller in Mozambique, where the Portuguese version of the ISAAC questionnaire was used, which has been clinically validated [23]. Despite this fact, the report of severe asthma in the written questionnaire in that study was sometimes higher than the report of any wheezing, suggesting some misunderstanding of the written questions, as is also well described by the authors [16]. Furthermore, the prevalence of wheezing on exercise, night wheeze and severe attacks in Mozambique appear to be higher with the video questionnaire.

Although the authors did not always manage to provide data from comparable questions, the more striking result from these studies overall is that the prevalence of asthma-like symptoms is consistently higher in Mozambique than in Iran according to the video questionnaire, while the findings using the written questionnaire are more variable and sometimes opposite. In the absence of objective measurements, we can only conclude that presently we cannot rely on either questionnaire for comparing the prevalence of asthma between these two countries. Clearly, we need further studies providing a better knowledge of both instruments and possibly the development of more effective tools to identify asthmatic children independently from local and cultural factors.

The picture changes, however, if we look to the value of this data for the knowledge of the burden of asthma within each country. Here both instruments appear to be useful to compare the prevalence of asthma-like symptoms in different groups and to follow the future trends of the disease over time, which are likely to provide useful information on the factors associated with changes in the prevalence of asthma in these developing countries. Possibly more importantly, they may be extremely useful to deploy interventions to decrease underdiagnosis of asthma and improve the health care for asthmatic children. Since, as also shown in these reports, we know that the disagreement between the two questionnaires affects the positive agreement much more than the negative [12, 14], children positive to either questionnaires have an higher risk of having asthma than those negative to both, and a deeper screening of these children could help to identify many cases of undiagnosed asthma. This approach has been proved extremely valuable to children from deprived schools in the United States, where the video questionnaire has

been shown to be able to identify a substantial number of children with undiagnosed asthma undetected by the written questionnaire [24] and has been integrated in a very successful intervention programme [25]. In the end, we must keep in mind that the main objective of epidemiologic research is to improve the health of people, and this can be sometimes achieved even with imperfect tools and without a complete knowledge of the mechanisms involved.

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