Reviewer’s report

Title: Development and feasibility of a wearable infant wrist band for the objective measurement of physical activity using accelerometry

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Reviewer: Benjamin Gardner

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This paper reports a study of mothers' views towards a wristband designed to facilitate objective measurement of physical activity when worn by infants.

The main limitation of the work is that, although presented here as a study of feasibility and acceptability, no a priori feasibility or acceptability criteria are presented. This causes several problems. First, without pre-specified success criteria, it is not possible to establish whether the wristband was indeed feasible or acceptable. Five relevant dimensions of feasibility and acceptability are described in the Discussion (p15), but success criteria should be specified at an earlier point (e.g. end of Introduction, or in Method). Additionally, many of the dimensions described on p15 are not quantifiable (or at least, not quantified): for example, 'the ability of the band to be worn for at least three days consecutively'. What are the criteria for assessing 'ability' here? Second, the Discussion is rather unfocused and overly long, because it describes not only quantifiable feasibility and acceptability outcomes, but also parents' views towards the wristband more broadly.

Relatedly, what is the authors' definition of 'acceptability'? As I understand it, the term refers to whether potential participants would be willing to receive or engage with a particular treatment - in this case, whether parents would be willing to allow their children to be fitted with the wristband, with the intention for it to be worn for 7 days. Yet, it is not clear whether all of the data presented here are relevant to acceptability. For example, the authors present data on parents' preference for wristband colour. But what evidence is there that the colour of the wristband is of consequence for the acceptability of the wristband? If none, how do we know that these data are of importance? The same applies to the 'perceptions' and 'comfort' data presented on p14. Similarly, on p17: 'the majority of mothers noticed some form of response … although this was mainly due to curiosity and was not of concern'. If these data are 'not of concern', why report and discuss them?

Also problematic is the limited nature of some of the data that are provided. For example, we learn that some parents were 'a little worried' or 'very worried' about the safety of the wristband (p13). But no data are available to explain the exact concerns that underpinned these responses. Furthermore, where qualitative data are provided to explain mothers' concerns, the authors suggest that the data may not be particularly meaningful because of language translation
problems, which undermines the credibility of the data. For these reasons, we learn little about how the wristband might be improved to address these concerns.

Finally, the Introduction did not provide a very strong rationale for the study. On p5, four studies are mentioned that have involved infants wearing wrist or ankle bands. Why, then, is a new wristband required? The authors argue that 'none [of the four studies] have described the design of the attachments or the feasibility for future use' (p5). This would seem to be an issue of poor reporting in previous studies though, rather than that the wearables used in those studies are necessarily unsuitable.

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