Does qualitative synthesis of anecdotal evidence with that from scientific research help in understanding public health issues: a review of low MMR uptake

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Study objective: To explore the professional and parental factors underlying low MMR uptake by qualitative synthesis of evidence from technical and non-technical anecdotal literature. Methods: An intensive investigation of literature covering research, press, online, E groups and grey literature was carried out using devised search strategies. Key themes were identified from both the research and anecdotal evidence, which were merged to form common themes. Results: The review of technical literature identified media scare and inadequate information from health professionals as the main reasons for non-uptake of MMR. The non-technical anecdotal evidence showed that professionals’ belief in parental right to choose, target payments and fear of autism were the major factors. Conclusions: Anecdotal evidence may contribute to evidence-based public health practice, especially in widely debated public health issues.

Keywords: complementary medicine and MMR vaccination, MMR vaccination uptake, MMR vaccine, religion and MMR, review

The recent decline in MMR vaccine uptake in the UK is a typical example of the public’s attitude clashing with that of the government. The uptake started declining when the controversial study linking MMR vaccine with autism was published.1 The current uptake rate of 84% is well below the desired 95% that is essential for herd immunity. Certain areas have MMR uptake rates as low as 50%, which poses a serious threat of measles epidemics to the children living there, as evident from the outbreaks of measles in Camden area of London.2 Similar stories have also been reported from the Netherlands and Ireland.3–5

Concern among certain sections of the public is manifested as declining uptake of the vaccine, increasing demand for single vaccine and heightened anxiety. Studies have been carried out to elicit parental and professional concerns about the vaccine, although the media debate still continues. Parents and professionals respond to the debates in the media, and to both scientific and lay press, which are numerous and varied. We conducted a review of research and the other sources of information separately and synthesized the findings to establish overall parental and professional factors. Such a broad review was expected to inform new approaches to public health professionals amongst public health organizations to improve the uptake.

Methods

Selection criteria

Technical literature. Inclusion criteria were any study that examined the reasons underlying non-uptake of MMR vaccine and interventions to improve the uptake in developed countries published between 1990 and 2002. Excluded were studies on MMR vaccine uptake but not relating to primary immunization.

Non-technical literature. Inclusion criteria were anecdotal reports in scientific and other press, any debate, press and media statements, statements from anti-MMR organizations, parental reports published in the period 1990–2002 in the UK perspective. Excluded were views of parents and professionals on the vaccine from other developed countries using MMR vaccine (e.g. Japan).

Search strategy

Technical literature. Search strategies were devised and run in the electronic databases such as MEDLINE, the Social Science Citation Index and EMBASE to identify all relevant scientific research. The MEDLINE MeSH terms relevant to this review were (i) measles mumps and rubella vaccine, review; (ii) MMR vaccine uptake; (iii) religion and MMR vaccine; (iv) complementary therapy and MMR vaccine; (v) autism; (vi) anti-MMR vaccine groups; and (viii) anti-vaccination groups. Snowballing (iterating the search through cross-references) was used to identify other published and unpublished documents. A few research documents were obtained through personal communication.

The titles and abstracts of studies identified were screened by the reviewer. The full text of each study identified as of potential relevance was re-screened. The decision to include or exclude was made by using the selection criteria. All the papers and reports of lay and professional views were reviewed by the same interviewer and checked against the inclusion criteria.

A structured format was devised to review the research based on the type of the study, sample size, response rate and the results relevant to the research question. The studies were then ordered in descending order of evidence hierarchy to obtain the most important findings.

Lay and professional views. The newspapers were scanned for the relevant news stories. The local library was scanned for the
archive material for specific newspaper stories and specific TV and radio programmes, especially those which have made an impact. An internet search was done using the Google search engine. Press releases, and websites of the BBC, Private Eye and anti-MMR organizations were explored to review the lay views. Efforts were made to scan all medical journals for anecdotal reports. Discussions and e-mail correspondence (Vaccimmuk groups) were also included to establish the overall professional views.

The lay and professional views were reviewed using content analysis in which each anecdotal report was broken down into ideas, which were then grouped to form key themes.

Analysis

A qualitative synthesis of themes from both the reviews was done, as quantitative synthesis was judged impractical due to different study designs, outcomes and inclusion of anecdotal reports.

Results

The search identified 52 research articles, 280 reports on lay views and 128 reports on professional views.

Technical literature

Of the 52 studies, 20 did not meet the inclusion criteria and were not included in the review. Of the remaining 32, 30 were quantitative studies and two were qualitative. The review showed that the factors influencing the uptake varied according to the local population and geography. Not receiving unbiased and adequate information from health professionals and media’s adverse publicity was the most common reason identified by most studies7–10,12,13 (Table 1).

Only three studies on interventions to improve uptake were identified, of which two were randomized trials. A randomized controlled trial found targeted mailing of information on MMR to mothers was not effective in improving uptake.18 A campaign on the vaccine using a case of measles was found effective in improving the uptake.19 A cross-sectional study found that training of primary care health professionals increased the uptake.20 A significant proportion of health professionals were unsure of the rationale for the booster dose of MMR23–25 (Appendix 1).

Anecdotal evidence

Parental views. A total of 280 reports on parental views was reviewed. The reviewer identified five key themes, the most common of which was lack of adequate information about MMR from the health professionals. At least 55% of the reports on parental views reflected this idea, for example a statement from the mother of an 11-month-old child in the BBC news: ‘I want to immunize my child against measles, but I have not got clear information about the vaccine’. This supports the findings of the review of research studies.32,45

Other themes identified were: (i) lack of belief in information from the from the government sources as shown by a statement from the mother of 1-year-old child in the BBC’s Panorama program: ‘Is the resistance to separate jabs only due to lack of cash in the NHS? As a parent I would pay any price to protect my children’; (ii) general practitioners are promoting MMR because of their target payments; (iii) media scare; and (iv) an uncommon theme was the belief that MMR is unsafe and causes autism in children.26,41,42,43,45

Professional views. A total of 128 reports were reviewed and only two key concepts emerged from this review, which were that the vaccine is safe and should be recommended and that parents have the right to choose even if the vaccine is safe. Only 20% of the reports were unequivocally supportive of the vaccine.28,29,32–33,40,44,45

Discussion

Our results showed that synthesis of individual lay and professional views with research findings may identify some important factors that would have otherwise been missed. This is especially important in widely debated public health issues like MMR. The significance of adding anecdotal evidence to research evidence was identified by Roberts et al.37 in their meta-analysis on MMR uptake. Identification of such factors is important in terms of their implications on immunization policy and interventions.

Our review identified some important issues on MMR uptake, such as the influence of pressure groups and their online messages on MMR uptake,42 lack of adequate information from the health professionals and confusing messages from media, rendering parental decision-making difficult.

The importance of the media’s adverse publicity on MMR uptake has been supported by both research and anecdotal evidence. The major communication channels that are studied to have an impact on the population are TV, the press and the internet. Studies have shown TV and the press as important sources of health information for the public. A study showed that 60% of people receive their information on health matters from the TV and newspapers. Only 20% received their information from the internet. Pareek and Pattison,32 in their cross-sectional survey of a large sample, reported that 38% of their sample got their information on MMR from TV though majority of them viewed health professionals as the most trusted source.

These findings are also strongly supported by the anecdotal evidence. For example, in a TV interview, the mother of 3-year-old girl had reported: ‘When I got a letter for Katie [first child]
there was a show in the TV about a child with measles. He was miserable. I took Katie immediately for MMR. But for Emma [second child], there was so much publicity about MMR and it’s links with autism that I am not comfortable.'44

Both the research and anecdotal evidence showed that media’s adverse campaign after the Wakefield study had decreased the confidence of both the public and health professionals about the safety of the vaccine. Anecdotal evidence also showed that media could play a role in improving the uptake by communicating about the threat of measles. Research evidence for the effectiveness of media’s campaign on improving the uptake is inconclusive.

Our review has certain limitations. One is that the professional and lay views may not represent those of the entire population. The second limitation is that there were not many trials or systematic reviews on this issue. Most studies were cross-sectional, thus reducing the rigour of our secondary research. There was no weighting given to reflect the quality of the studies.

Despite these limitations, our review confirms that secondary research should devise methods to allow other sources of information for widely debated public health issues to help in evidence-based public health practice.

We conclude by hypothesizing that MMR uptake could be improved by a comprehensive strategy involving health professionals, parents and the media by developing a campaign for MMR using a case of measles.

Key points

- MMR uptake has been remaining at suboptimal levels in the UK since the controversial study by Wakefield was published.
- There are some areas where the uptake levels are as low as 50% posing threat of measles epidemics, as evident from measles outbreaks in London and Netherlands.
- Studies using either qualitative or quantitative research methods have identified several factors that influence MMR uptake.
- There have been numerous debates involving lay and professional views Synthesis of anecdotal evidence with that from scientific literature in widely debated public health issues would help in filling up the gaps in evidence base and in planning effect.

References

Appendix 1

<table>
<thead>
<tr>
<th>Topic</th>
<th>Study (evidence)</th>
<th>Study type</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interventions to improve uptake</td>
<td>Mason et al. 18</td>
<td>Randomized controlled trial</td>
<td>Targeted mailing of information did not improve the uptake</td>
</tr>
<tr>
<td></td>
<td>Hodes et al. 19</td>
<td>Evaluation study</td>
<td>A measles campaign improved the uptake</td>
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<tr>
<td></td>
<td>Mason et al 21</td>
<td>Evaluation study</td>
<td>Newspaper’s adverse campaign decreased the uptake</td>
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<tr>
<td>Parental views</td>
<td>Roberts et al. 3</td>
<td>Meta-analysis</td>
<td>Research evidence may not identify all factors influencing immunization</td>
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<tr>
<td></td>
<td>Petrovic et al. 23</td>
<td>Cohort study</td>
<td>Lone parent, general practitioner and birth order influenced the uptake</td>
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<tr>
<td></td>
<td>Evans et al. 17</td>
<td>Retrospective cohort</td>
<td>Primary immunization predicts the uptake of the booster dose</td>
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<tr>
<td></td>
<td>Evans et al. 13</td>
<td>Qualitative study</td>
<td>Risks of measles against MMR vaccine and general practitioner target payments influenced the uptake</td>
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<tr>
<td></td>
<td>Cunnighame et al. 27</td>
<td>Cross-sectional studies</td>
<td>Religious reasons, homeopathy, measles is not a serious infection, measles infection is needed for a child's development and lone parent</td>
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<td></td>
<td>Sharland et al. 6</td>
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<td>Duffel 8</td>
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<td>Pareek et al. 16</td>
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<tr>
<td>Professional factors</td>
<td>Smith et al. 25</td>
<td>Cross-sectional survey</td>
<td>95% of health professionals confident of the vaccine</td>
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<tr>
<td></td>
<td>Petrovic et al. 23</td>
<td>Cross-sectional survey</td>
<td>50% of health professionals did not recommend second dose of the vaccine</td>
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<tr>
<td></td>
<td>Lewendon 20</td>
<td>Survey of 102 health professionals</td>
<td>Training of staff improved the uptake</td>
</tr>
<tr>
<td></td>
<td>Ghebrehewet 24</td>
<td>Survey of 148 health professionals</td>
<td>19% fall in professional confidence after media publicity</td>
</tr>
</tbody>
</table>

Pragmatic, ecological, reviews of records and smaller cross-sectional studies are not listed in the table.