



Using best-worst scaling to rank factors affecting vaccination demand in northern Nigeria



Sachiko Ozawa^{a,b,*}, Chizoba Wonodi^c, Olufemi Babalola^d, Tukur Ismail^e, John Bridges^{c,d}

^a Division of Practice Advancement and Clinical Education, UNC Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

^b Department of Maternal and Child Health, UNC Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

^c Department of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

^d Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

^e Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

ARTICLE INFO

Article history:

Received 7 March 2016

Received in revised form 25 August 2017

Accepted 26 September 2017

Available online 14 October 2017

Keywords:

Nigeria

Vaccine

Immunization

Preferences

Best-worst scaling

Trust

ABSTRACT

Background: Understanding and ranking the reasons for low vaccination uptake among parents in northern Nigeria is critical to implement effective policies to save lives and prevent illnesses. This study applies best-worst scaling (BWS) to rank various factors affecting parents' demand for routine childhood immunization.

Methods: We conducted a household survey in Nahuche, Zamfara State in northern Nigeria. Nearly two hundred parents with children under age five were asked about their views on 16 factors using a BWS technique. These factors focused on known attributes that influence the demand for childhood immunization, which were identified from a literature review and reviewed by a local advisory board. The survey systematically presented parents with subsets of six factors and asked them to choose which they think are the most and least important in decisions to vaccinate children. We used a sequential best-worst analysis with conditional logistic regression to rank factors.

Results: The perception that vaccinating a child makes one a good parent was the most important motivation for parents in northern Nigeria to vaccinate children. Statements related to trust and social norms were ranked higher in importance compared to those that highlighted perceived benefits and risks, healthcare service, vaccine information, or opportunity costs. Fathers ranked trust in the media and views of their leaders to be of greatest importance, whereas mothers placed greater importance on social perceptions and norms. Parents of children without routine immunization ranked their trust in local leaders about vaccines higher in considerations, and the media's views lower, compared to parents with children who received routine immunization.

Conclusions: Framing immunization messages in the context of good parenting and hearing these messages from trusted information sources may motivate parental uptake of childhood vaccines. These results are useful to policymakers to prioritize resources in order to increase awareness and demand for childhood immunization.

© 2017 Elsevier Ltd. All rights reserved.

1. Background

Vaccines have been proven time and again to be effective in saving lives and preventing illnesses and disabilities [1,2]. Although global routine immunization coverage has increased over time, one in five children remain unvaccinated, where reaching that fifth child has been a challenge worldwide [3]. Prior efforts to increase immunization uptake in Africa at large have primarily focused on

barriers on the supply-side to the detriment of factors relating to vaccine demand [4]. Experiences with polio eradication efforts in Nigeria have underscored that interventions focusing on increased vaccine availability alone are not sufficient to bring about the desired change in the level of vaccination [5]. Efforts to raise immunization coverage must go beyond ensuring an effective supply to also understand what is necessary to achieve universal demand.

In Nigeria, nearly 1 million children remain unvaccinated every year, the highest number of unvaccinated children in any African country [6]. Immunization coverage in Nigeria has been low and variable over time [7–10]. In particular, increasing routine

* Corresponding author at: CB#7574, Beard Hall 115H, Chapel Hill, NC 27599, USA.

E-mail address: ozawa@unc.edu (S. Ozawa).

immunization coverage has been challenging in northern Nigeria. According to the Nigeria Demographic and Health survey (NDHS) in 2013, the national coverage for three doses of the diphtheria-tetanus-pertussis vaccine (DTP3) and full immunization coverage were 38% and 25%, respectively [11]. However, the national average masks huge subnational heterogeneity in coverage, where a smaller proportion of children in the north-west (9.6%) and north-east (14.2%) are fully immunized compared to the south-east (51.7%) and the south-west (40.9%) regions [11].

Various studies have identified different barriers to effective uptake of childhood vaccination in northern Nigeria [12–14]. Supply-side barriers may include difficulty traveling to remote rural areas, migration, shortages of vaccines, insufficient health workers, funding limitations and political preferences for some regions over others [14,15]. On the other hand, demand-side factors such as myths, religious associations, distrust, cultural beliefs and a general lack of understanding of immunization also deter parents from demanding vaccines for their children [16–18]. In particular, mistrust in vaccines was identified to be an important issue in the uptake of polio vaccination in northern Nigeria as it was suspected of causing infertility in Muslim girls [5,19–21]. Understanding and prioritizing these barriers is critical in designing solutions that can improve the uptake of routine immunization, thereby reducing the burden of disease in Nigeria.

This study conducted a household survey to prioritize factors associated with parents' demand for routine childhood immunization in northern Nigeria. We used a type of stated preferences method to investigate parents' views on the importance of various facilitators and barriers to immunization uptake. This approach allows us to measure the overall importance of each factor and rank the factors relevant to parents' vaccination decisions. Furthermore, we stratified our analysis to see if these rankings were different by gender of parent respondent. The results of this study are useful for governments, donors and partners designing and funding immunization programs to prioritize their efforts to promote routine immunization and remove key barriers to uptake.

2. Methods

We first carried out a literature review to identify factors that influence the demand or uptake of routine immunizations for children. We investigated these factors across low- and middle-income countries with a focus on the literature from Nigeria. The literature was mainly sourced through PubMed, supplemented with additional online searches for gray literature. We identified 16 factors or attributes which influence immunization uptake documented mostly from Nigeria. These factors were broadly classified under four groups, namely: (1) perceived benefits and risks (BR), (2) healthcare services and vaccine information (SI), (3) trust and norms (TN), and (4) opportunity costs (OC). Factors related to perceived benefits and risks included the perception of the child being at risk of disease, vaccine effectiveness, perception of adverse events, and concerns over multiple vaccine doses [5,17,22–25]. The healthcare services and vaccine information category considered people's tendency to seek care, ability of mothers to make immunization decisions, vaccine knowledge and hearing conflicting information about vaccines [9,17,26]. Factors around trust and norms included leader's views, media coverage, institutional mistrust and social norms around vaccination [5,9,24,27,28]. Finally, opportunity costs captured vaccine availability, vaccination costs, time commitment and access [17,22,23,26,28]. These groups were used to interpret and discuss the findings. Table 1 provides a description of each factor with references to original sources.

Each factor was identified from the literature as an attribute that may positively or negatively influence parental uptake of vac-

cines. For example, perceived risk of disease or perceived efficacy of vaccines are positive attributes that promote vaccine uptake. On the other hand, perceived adverse events or multiple vaccine doses are negative attributes that may inhibit parental decision to vaccinate children. Selected factors were balanced to avoid response biases due to the directionality of the phrasing. Each group included two positive and two negative statements about immunization. These factors were reviewed by vaccine experts and a local advisory board formed for this study.

We designed and conducted a household survey using best-worst scaling (BWS) to ask parents with children under five years of age in northern Nigeria to rank the importance of various perceived facilitators and barriers for vaccination uptake. Stated preference methods such as BWS are increasingly used to understand preferences of patients and other stakeholders in medicine and public health [29–31]. BWS is a particularly useful method to rank the importance of attributes with limited cognitive burden on respondents [32]. BWS presumes that respondents can choose between extreme items (e.g. best and worst, most and least, smallest and largest) in a set of three or more choices. In our scenario, respondents were asked to think about a child less than 1 year old and select factors that are most (best) and least (worst) important to them when deciding whether to vaccinate a child. The 16 factors identified through the literature review served as the framework behind our BWS design and were presented in choice sets. A balanced incomplete block design was used to construct the choice sets, which ensured that each set had a fixed set size, equal occurrence and co-occurrence across all sets. Specifically, each factor appeared 6 times and exactly twice with each other factor in the survey. Respondents were presented with 16 choice sets of 6 objects per set to select factors they deem as most or least important in their decisions to vaccinate children. Fig. 1 presents an example BWS choice task.

The choice tasks were developed into a pictorial questionnaire and translated to Hausa, the local language, to aid in respondents' understanding. Pictures were selected for local relevance and appropriateness for each factor. Fig. 2 presents an example pictorial questionnaire for the same choice task in Fig. 1. Each hypothetical scenario was read out to respondents. The BWS choice tasks and pictures were pre-tested to ascertain that respondents understood the choice tasks and pictures, and the questionnaire was back-translated for accuracy. The pre-test resulted in minor modifications to the phrasing of statements and decisions on pictures chosen that best aided respondents' understanding.

The survey was carried out in November 2013 amongst parents who live across six districts in Nahuche, Zamfara state. Nahuche is the study site of an ongoing Health and Demographic Surveillance System (HDSS) and represents a typical rural area in northern Nigeria, with infrastructural challenges such as poor sanitation, virtually non-existent electricity, and poor road networks [33,34]. Each district contributed to the sample according to its population. The sampling frame was obtained from the HDSS project and consisted of clusters in each district and households in selected clusters. A small number of clusters deemed hard-to-reach due to a security threat or difficult terrain were excluded. We systematically sampled clusters, followed by a random route procedure to select households for the survey. A household was defined as a person or a group of related or unrelated persons, who live together and share common cooking and eating arrangements. Approximately 20–40 households were randomly selected in each cluster to participate in the study. We stratified our sample by gender as we hypothesized that there may be important differences in rankings. The interview was conducted in the home and took an average of one hour to complete. All individuals who were approached and available agreed to participate in the study.

Download English Version:

<https://daneshyari.com/en/article/8486705>

Download Persian Version:

<https://daneshyari.com/article/8486705>

[Daneshyari.com](https://daneshyari.com)