Parental Perceptions, Beliefs and Attitudes towards Routine Childhood Vaccinations – United Arab Emirates Experience

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Abstract:

Background: Immunizations have been considered by many as one of the greatest inventions of the 20th century. Despite their success, there had been rising dispute in regards to vaccinations, which led to the emergence of skeptics all around the world who are questioning their efficacy and raising concerns about their safety.

While increasing data are published internationally about this topic, little do we know about the figures in the United Arab Emirates (UAE)

Objectives: This study aims to explore the attitudes, beliefs and perceptions of parents across different Emirates in UAE about the routine vaccinations.

The results of the study will help health care providers have better understanding of the compliance to vaccinations in the area and therefore initiate targeted awareness campaigns to address main issues behind vaccine refusal and misconceptions around it.

Methods: An observational, cross-sectional study was approved by the institutional review board in accordance with the regulations of the Health Authority in Abu Dhabi (HAAD). Survey questionnaires consisting of 26 questions of qualitative and quantitative aspects were distributed to randomly selected parents across five different cities in United Arab Emirates.

Results: A total of 397 participants were included in our study. Parents have showed good perception of the effectiveness of vaccines as 90% agreed that vaccines are effective in preventing certain diseases. However, in regards to parents’ knowledge, 44% did not know that some vaccines prevent certain types of cancer. When looking at the rate of vaccination refusal in our study, we found that 10% of our population refuses to vaccinate their children. Three quarters of those did so because of either their belief that their child will develop his/her immunity naturally or that vaccinations are not safe. Also of note, one thirds of parents believed that vaccinations can cause serious side effects while 19% reported that they have not received sufficient information regarding vaccination from their child’s health care provider.

Conclusion: In our study, parents have demonstrated adequate knowledge and attitudes towards vaccinations. However, there still remains parents who refuse to vaccinate their children. Reasons behind the refusal can be tackled by the primary health care providers through adequate counseling and community based campaigns which aims to educate families about the safety and importance of vaccination.
Introduction:

Immunizations are considered one of the greatest inventions of the 20th century and has significantly decreased the burden of infectious diseases worldwide since its introduction. Despite this success, there had been an increasing number of skeptics all around the world regarding its safety and efficacy. Consequently, the last few years have witnessed a noticeable increase in parental refusal of routine vaccinations.

Although parents’ knowledge, attitudes and perceptions regarding childhood vaccination have been studied in many countries, similar studies are lacking in our region. We believe that such studies are critical at times when sceptics seem to influence an increasing number of parents in UAE.

Appropriately identifying gaps in the knowledge and perception of parents residing in the UAE will help health care professionals and officials to strategize plans to regain interest and confidence in vaccines again; and help provide better resources that are reliable and accessible to all sectors of the community.

Objectives:

This study aims to explore the knowledge, attitudes and perceptions of parents across different Emirates in the United Arab Emirates about routine vaccinations.

Questions formulated in this survey are aimed to meet the following analytical goals: identify the prevalence of parental refusal of vaccines, the main reasons of refusal, the fears and concerns about the safety of vaccines and their perception of the possible adverse effects. This research also explores parent’s attitude towards the introduction of new vaccines and the sources of information parents rely on in making vaccine-related decisions.

Methods:

Study design and setting:

The study has been approved by the Health Research, Ethics and Innovation Program in Tawam Hospital, Al-Ain, United Arab of Emirates. A cross-sectional survey was conducted during the period of 6 months (January – June 2018) in multiple cities in United Arab of Emirates including Al-Ain, Abu-Dhabi, Dubai, Sharjah and Ajman. These cities are highly populated with people of diverse backgrounds and it was aimed to represent the general population across the country.

The questionnaire and data collection:

A pre-tested 24-item questionnaire was used to collect data from participants and the survey was composed of three main sections. The first section was developed to collect data on parents’ demographics and their attitude toward childhood vaccinations. The second section assessed parents’ beliefs and perceptions about the benefits associated with and the purpose of currently administered vaccination as per the national vaccine schedule. The survey also explored whether they have received sufficient information about them, along with parents’ confidence in accepting new vaccines. The third section focused on sources of information about vaccination and immunization programs in United Arab of Emirates and parent’s knowledge and perception about the possible side effects. The questions were formulated by the authors themselves and were developed after an extensive review of relevant literature and relevant previous large studies. The questionnaire was thoroughly revised by the research team and a senior faculty member with sufficient experience in research for validity, comprehensiveness, and appropriateness to collect the required information from the targeted population. Responses to attitude questions were recorded as “Yes”, and “No”. A five point-Likert scale (“Strongly agree”, “Agree”, “Not sure”, “Disagree”, and “Strongly disagree”) was used to assess parents’ beliefs and perceptions about childhood immunization.

The main questionnaire was in English and translated to Arabic by an authorized translator in...
Tawam Hospital. The questionnaire was tested with a group of 20 parents. Minor modifications were suggested and then adopted in the final questionnaire.

Convenient method of sampling was adopted. Parents with children 0-16 years of age were invited to participate. Written informed consent was obtained and participation was optional. Data was collected by the authors of the research themselves along with trained volunteers who helped in the questionnaire distribution. There were two methods used for obtaining responses i.e. face-to-face interview and online electronic surveys and all responses were recorded and saved in protected places to maintain confidentiality and anonymity. Random selection of participants was done with simple ballot at specific public places with high traffic count of parents. About 420 children’s parents participated in this study and answered the questionnaire, however 23 questionnaires were excluded as one or more questions were not answered by the participants.

**Statistical analysis:**

Data was processed using the software Statistical Package for Social Science (SPSS) version 22. Descriptive statistics were used to describe all variables. The descriptive analysis was shown as percentages and frequencies. Association between dependent variables (knowledge, and attitudes) and independent ones (parents’ demographics) were tested using Chi-square test. P values of < 0.05 were considered statistically significant.

**Results:**

**Parents’ demographics:**

420 surveys were distributed and the response rate was 100%. 23 surveys were excluded due to lack of completeness. Of those included in the survey 74.1% were completed by females and 25.9% were by males. This difference could be explained by the fact that mothers tend to complete the survey more often when couples were approached. University graduates contributed to 80% of our population. 64% were residing in northern emirates which included Dubai, Sharjah and Ajman

**Parents’ knowledge and perception of vaccination:**

Good percentage of parents believed in the effectiveness of vaccines as 90% agreed that vaccines are effective in preventing certain diseases. However, in regards to parents’ knowledge, 44% did not know whether some vaccines prevent certain types of cancer. A statistically significant association was observed between gender, nationality, area of residence, social status and level of education and the knowledge, perception and attitudes towards vaccination. This can be noticed in the highly significant associate of gender and the perception of vaccination safety. In those who agreed that vaccines are safe 22% were male and 65% were females (P <0.001) Also of note, 1/3 of the parents believed that vaccinations can cause serious side effects while 19% reported that they have not received sufficient information regarding vaccination from their child’s health care provider.

**Parents’ attitudes towards vaccination:**

When looking at the rate of vaccination refusal in our study, we found that 10% of our cohort refused to vaccinate their children. Three quarters of those did so because of either their belief that their child will develop his/her immunity naturally or that vaccinations are not safe. Many parents were reluctant to give new vaccines to their children as only 64% are willing to do so. This is similar to that found when asked if they would pay for new vaccines (66%). Statistically significant correlation was found between the parents’ attitudes and their nationality, area of residency and level of education. For example, we have observed a significant association between level of education and the likelihood to give their children new vaccination (P 0.045).

**Discussion:**

Vaccinations are considered one of the greatest discoveries in human history which lead to the eradication of diseases with high mortality and
morbidities. Since parents are the primary caregivers and decision makers in the pediatric population, adherence and acceptance of vaccination is dependent on the parents’ knowledge, perception and attitudes toward childhood vaccination.

Analysis of parents’ knowledge and perception revealed that the vast majority of the participants (89.6%) in this study believed that vaccines are effective in preventing certain diseases. This number is very closely comparable to that reported in AlShammari et al 2017 and Bernsen et al 2011 (1) (2). This is particularly significant since entrusting the effectiveness of vaccines is generally strongly linked to parental immunization acceptance and reduces the risk of vaccine refusal and hesitancy. 3 Parents in our study seemed to have concerns in regards to the co-administration of multiple vaccines at once; as high as 50% of the participants agreed that multiple vaccines shouldn’t be given at the same time. Jaaijk et al 2013 found that 69% of parents indicated that 3 vaccine injections per visit is too much. A similar multinational study in 7 different countries showed that parents preferred a maximum of 2 injections per visit.

Contrary to common belief, infants have an enormous capacity to respond to multiple vaccines at once. 4 Many co-administered vaccines induce similar humoral immune responses when given at the same or different times. Administering vaccines at different sites can be easier to accomplish than if given in the same syringe, as the latter can pose challenges partly due to incompatibilities of agents used to buffer or stabilize individual vaccine.

An area of growing concern is vaccine refusal or hesitancy. 10% of the parents in our cohort have refused to vaccinate their children, 3 times higher than percentage found by Beard et al 2016. 7 When compared to Australian data, reasons for vaccine refusal where similar and were mainly related to concerns about vaccine safety. 8 One possible reason is that physicians do not spend sufficient time counseling parents about the safety profile of childhood vaccination.

Another area of concern is the readiness of parents to accept new vaccines. 36% of parents were either unsure or didn’t agree on giving a new vaccine to their children. Studies such as that by Hak et al 2005 have looked into this, and they found that 11% of their participants had no intention to comply with any new vaccination. 8 However, in a national household survey published by Irwin et al 2017, found that >84% would accept Ebola vaccines if they became available in Guinea. Acceptability was significantly higher among participants who understood its transmission modes, or knew Ebola-affected persons. 6 In our study a statistically significant (P 0.045) association was found between level of education and readiness to accept new vaccines which suggests that the higher the level of education the more likely that parents will give their children new vaccines. 9

Conclusion:

In conclusion, most surveyed parents believed that vaccines are important for children’s health and disease prevention. However, it was found that the rate of refusal is directly related to the knowledge of parents about vaccines and whether they were counseled properly by their physician. Another important association was the level of education as it was found to have a positive impact on the readiness to accept new vaccines. Therefore, we believe that future campaigns about vaccines need to target parents of lower levels of education. In addition, pediatricians should be reminded about the importance of proper counseling techniques and given enough time and tools to do that.

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Table 1: Parents’ Demographics

| Characteristics         | Frequency | Percentage |
|-------------------------|-----------|------------|
| **Gender**              |           |            |
| Female                  | 294       | 74.1%      |
| Male                    | 103       | 25.9%      |
| **Nationality**         |           |            |
| Emirati                 | 151       | 38%        |
| Middle-Eastern          | 157       | 39.5%      |
| Others                  | 88        | 22.2%      |
| **Age**                 |           |            |
| 18-25                   | 26        | 6.5%       |
| 25-40                   | 266       | 67%        |
| Above 40                | 105       | 26.4%      |
| **Level of Education**  |           |            |
| High school and below   | 77        | 19.4%      |
| University and above    | 320       | 80.6%      |
| **Number of children**  |           |            |
| 1-2                     | 175       | 44.1%      |
| or more                 | 222       | 55.9%      |
| **Area of residency**   |           |            |
| Abu Dhabi Emirate       | 143       | 36%        |
| Northern Emirate        | 254       | 64%        |
| **Total**               | 397       | 100%       |
Table 2: Association between parents’ knowledge/perception and demographic characteristics

| Vaccines are safe in general | Strongly Agree (%) | Agree (%) | Not sure (%) | Disagree (%) | Strongly Disagree (%) | Significance* |
|-----------------------------|-------------------|----------|-------------|-------------|----------------------|--------------|
| Male                        | 56(14.1)          | 32(8)   | 5(1.2)      | 10(2.5)     | 0(0)                 | 0.000        |
| Female                      | 116(29.3)         | 134(33.8)| 30(7.6)     | 8(2)        | 5(1.3)               |              |

| Vaccines are effective in preventing certain diseases | Strongly Agree (%) | Agree (%) | Not sure (%) | Disagree (%) | Strongly Disagree (%) | Significance* |
|--------------------------------------------------------|-------------------|----------|-------------|-------------|----------------------|--------------|
| Male                                                   | 56(14.1)          | 35(8.8) | 3(0.8)      | 9(2.3)      | 0(0)                 | 0.005        |
| Female                                                 | 122(30.8)         | 143(36.1)| 18(4.5)     | 8(2)        | 2(0.5)               |              |

| Vaccination can cause serious side effects | Strongly Agree (%) | Agree (%) | Not sure (%) | Disagree (%) | Strongly Disagree (%) | Significance* |
|-------------------------------------------|-------------------|----------|-------------|-------------|----------------------|--------------|
| Nationality                               |                   |          |             |             |                      |              |
| Emirati                                   | 10(2.5)           | 26(6.6) | 58(14.7)    | 39(9.9)     | 17(4.3)              | 0.038        |
| Middle-Eastern                            | 17(4.3)           | 27(6.8) | 69(17.5)    | 40(10.1)    | 4(1)                 |              |
| Others                                    | 3(0.8)            | 20(5.1) | 35(8.9)     | 26(6.6)     | 4(1)                 |              |

| Area of residency                          | Strongly Agree (%) | Agree (%) | Not sure (%) | Disagree (%) | Strongly Disagree (%) | Significance* |
|--------------------------------------------|-------------------|----------|-------------|-------------|----------------------|--------------|
| Abu Dhabi Emirate                          | 8(2)              | 25(6.3) | 56(14.2)    | 38(9.6)     | 16(4.1)              | 0.043        |
| Northern Emirates                          | 22(5.6)           | 48(12.2)| 10(26.8)    | 68(17.2)    | 9(2.3)               |              |

| Vaccines prevent serious disease and/or disability | Strongly Agree (%) | Agree (%) | Not sure (%) | Disagree (%) | Strongly Disagree (%) | Significance* |
|----------------------------------------------------|-------------------|----------|-------------|-------------|----------------------|--------------|
| High school and below                              | 26(6.6)           | 32(8.1) | 16(4)       | 2(0.5)      | 0(0)                 | 0.038        |
| University and above                               | 137(34.6)         | 120(30.3)| 34(8.6)     | 24(6.1)     | 5(1.3)               |              |

| Some vaccines prevent certain types of cancer      | Strongly Agree (%) | Agree (%) | Not sure (%) | Disagree (%) | Strongly Disagree (%) | Significance* |
|---------------------------------------------------|-------------------|----------|-------------|-------------|----------------------|--------------|
| Nationality                                       |                   |          |             |             |                      |              |
| UAE                                                | 28(7.1)           | 42(10.6)| 62(15.7)    | 15(3.8)     | 3(0.8)               | 0.027        |
| Middle-Eastern                                    | 21(5.3)           | 35(8.8) | 66(16.7)    | 26(6.6)     | 9(2.3)               |              |
| Others                                            | 9(2.3)            | 17(4.3) | 45(11.4)    | 17(4.3)     | 0(0)                 |              |

| Level of Education                                | Strongly Agree (%) | Agree (%) | Not sure (%) | Disagree (%) | Strongly Disagree (%) | Significance* |
|---------------------------------------------------|-------------------|----------|-------------|-------------|----------------------|--------------|
| High school and below                              | 21(5.3)           | 18(4.5) | 29(7.3)     | 7(1.8)      | 1(0.3)               |              |
| University and above                               | 37(9.3)           | 76(19.2)| 145(36.6)   | 51(12.9)    | 11(2.8)              |              |

| Area of residency                                  | Strongly Agree (%) | Agree (%) | Not sure (%) | Disagree (%) | Strongly Disagree (%) | Significance* |
|---------------------------------------------------|-------------------|----------|-------------|-------------|----------------------|--------------|
| Abu Dhabi Emirate                                  | 25(6.3)           | 34(8.6) | 70(17.7)    | 12(3)       | 2(0.5)               | 0.03         |
| Northern Emirate                                   | 33(8.3)           | 60(15.2)| 104(26.3)   | 46(11.6)    | 10(2.5)              |              |
Table 3: Parents' attitudes correlated with demographics

|                                | Strongly Agree (%) | Agree (%) | Not sure (%) | Disagree (%) | Strongly Disagree (%) | Significance* |
|--------------------------------|--------------------|-----------|--------------|--------------|------------------------|---------------|
| I would give any new vaccine to my child |                    |           |              |              |                        |               |
| Nationality                    |                    |           |              |              |                        |               |
| Emirati                        | 46(11.6)           | 59(14.9)  | 20(5.1)      | 24(6.1)      | 1(0.3)                 | 0.002         |
| Middle-Eastern                 | 45(11.4)           | 60(15.2)  | 35(8.9)      | 11(2.8)      | 6(1.5)                 |               |
| Others                         | 14(4.3)            | 25(6.3)   | 23(5.8)      | 20(5.1)      | 3(0.8)                 |               |
| Level of education             |                    |           |              |              |                        |               |
| High school and below          | 28(7.1)            | 31(7.8)   | 11(2.8)      | 6(1.5)       | 0(0)                   | 0.045         |
| College and above              | 80(20.2)           | 114(28.8) | 67(16.9)     | 49(12.4)     | 10(2.5)                |               |
| I would give any new vaccine to my child only if it’s included in the national vaccination schedule |                    |           |              |              |                        |               |
| Emirati                        | 70(17.7)           | 53(13.4)  | 12(3)        | 14(3.5)      | 1(0.3)                 | 0.008         |
| Middle-Eastern                 | 69(17.5)           | 68(17.2)  | 10(2.5)      | 6(15.2)      | 4(1)                   |               |
| Others                         | 24(6.1)            | 49(12.4)  | 3(0.8)       | 11(2.8)      | 1(0.3)                 |               |
| I would pay for a new vaccine that is not included in the national schedule only if it’s strongly recommended by my physician |                    |           |              |              |                        |               |
| Nationality                    |                    |           |              |              |                        |               |
| Emirati                        | 51(12.9)           | 48(12.2)  | 31(7.8)      | 15(3.8)      | 5(1.3)                 | 0.028         |
| Middle-Eastern                 | 34(8.6)            | 70(17.7)  | 24(6.1)      | 22(5.6)      | 7(0.8)                 |               |
| Others                         | 26(6.6)            | 3(9.1)    | 10(2.5)      | 16(4.1)      | 0(0)                   |               |
| Area of residency              |                    |           |              |              |                        |               |
| Abu Dhabi Emirate              | 46(11.6)           | 44(11.1)  | 32(8.1)      | 16(4)        | 5(1.3)                 | 0.024         |
| Northern Emirate               | 65(16.4)           | 111(28)   | 33(8.3)      | 37(9.3)      | 7(1.8)                 |               |
References:

1. Andre, F.E et al. 2008. Vaccination greatly reduces disease, disability, death and inequity worldwide. Bull World Health Organ. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2647387/

2. Chephra M et al. 2016. Exploring the Reasons behind Parental Refusal of Vaccine. J Pediatr Pharmacol Ther. Available from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4869767/

3. Magaji, A et al. 2014. Health belief model as framework for exploring the nonuse of immunization information by parents of under five children. Available from: http://www.who.int/bulletin/volumes/86/2/07040089/en/

4. Al shammari, T et al. 2018. Parental perceptions, attitudes and acceptance of childhood immunization in Saudi Arabia: A cross sectional study. Vaccine. Available from: https://www.sciencedirect.com/science/article/pii/S0264410X17316146

5. Bernson R.M et al, 2011. Knowledge, Attitude and Practice towards Immunizations among Mothers in a Traditional City in the United Arab Emirates. Journal of Medical sciences. Available from: http://applications.emro.who.int/imemrf/J_Med_Sci/J_Med_Sci_2011_4_3_114_121.pdf

6. Owais A et al. 2011. Does improving maternal knowledge of vaccines impact infant immunization rates? A community-based randomized-controlled trial in Karachi, Pakistan. BMC Public Health. Available from: https://bmcpublichealth.biomedcentral.com/articles/10.1186/14712458-11-239

7. Offit, P et al. 2002. Addressing Parents’ Concerns: Do Multiple Vaccines Overwhelm or Weaken the Infant’s Immune System? American Academy of Pediatrics. Available from: http://pediatrics.aappublications.org/content/109/1/124

8. Hak, E et al. 2005. Negative attitude of highly educated parents and health care workers towards future vaccinations in the Dutch childhood vaccination program. Vaccine Available from: https://www.ncbi.nlm.nih.gov/pubmed/15837208

9. Kathleen, I et al. 2017. Attitudes about vaccines to prevent Ebola virus disease in Guinea at the end of a large Ebola epidemic: Results of a national household survey. Vaccine. Available from: https://www.sciencedirect.com/science/article/pii/S0264410X17308034

10. Beard, F et al. 2016. Trends and patterns in vaccination objection, Australia, 2002–2013. Med J. Available from: https://www.mja.com.au/journal/2016/204/7/trends-and-patterns-vaccination-objectionaustralia-2002-2013?inline=true

11. Lawrence GL, et al. 2004. Reasons for incomplete immunisation among Australian children A national survey of parents. Aust Fam Physician. Available from: https://www.ncbi.nlm.nih.gov/pubmed/15301182

12. Yousif, M.A et al. 2013. Parents’ Knowledge and Attitudes on Childhood Immunization, Taif, Saudi Arabia. Journal of Vaccines and Vaccinations. Available from: https://www.omicsonline.org/open-access/parents-knowledge-and-attitudes-on-childhood-immunization-taif-saudi-arabia-2157-7560.1000215.php?aid=24212
