Prosser et al., Primary Health Care 2016, 6:2
DOI: 10.4172/2167-1079.1000228

Primary Health Care: Open Access

Research Article Open Access

Survey of Australian Father's Attitudes towards Infant Vaccination: Findings from the Australian Father's Study

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Abstract

Objective: To investigate the attitudes of expectant Australian fathers towards vaccination, and to identify factors which may influence these attitudes.

Methods: A cross-sectional survey study of 407 Australian men with expectant partners, mean age 30.4 (SD 6.7). Self reported attitude, level of knowledge and information resources accessed regarding pregnancy related issues. Participant demographics collected included: Age, number of children, relationship status, level of education, employment information and smoking status.

Results: Majority (89%) of participants had a positive attitude towards infant vaccination, 9% felt neutral and 2% had negative attitudes. Positive attitudes towards vaccination were associated with lower self-reported knowledge of pregnancy issues but a higher likelihood of discussing pregnancy issues with health care providers rather than sourcing information from the internet (both $p<0.001$).

Conclusion: A majority of Australian expectant fathers have a positive attitude towards infant vaccination. Fathers with negative attitudes to vaccination self-reported higher levels of knowledge. They were more likely to obtain information from the Internet instead of healthcare staff.

Implication for public health: Including fathers in health discussion with knowledgeable health care providers may result in increased vaccine uptake.

Keywords: Fathers pregnancy; Attitudes, Mixed methods study; Prospective study; Cohort study; Infant vaccination; Conscientious objector

Background

Vaccine preventable diseases place a heavy burden on the community and the introduction of widespread immunization regimens have resulted in the reduction or eradication of many diseases, saving millions of lives. It is considered one of the most significant contributions to the improvement in global health outcomes [1-6]. Some protection for non-immunized people may be achieved via 'herd immunity', when the majority of the population are vaccinated thus restricting the spread of disease [7].

Despite the success of immunization programs, many children still contract vaccine preventable illnesses, some with tragic outcomes [6,8]. Many of these children were too young to be vaccinated, unable to receive them for medical reasons or contracted disease as a result of vaccine failure. However, some parents choose not to vaccinate their children, citing political, personal or philosophical motives for declining [9-12]. Other vaccine opponents question the safety, efficacy and necessity of recommended vaccines [9-12].

While there is literature on parental attitudes to vaccination, there is a paucity of information on father's attitudes. Most studies reported that the mother was the primary source of information [9-12]. Given fathers play an important role in child rearing and exert influence on decision making processes as co-parent, we have sought to explore the attitudes of expectant fathers towards newborn vaccination.

Methods

Study design

A self-reporting survey of expectant fathers.

Setting

This study was undertaken as part of The Australian Father's Study (AFS), a longitudinal study of Australian father's experiences of parenthood from the third trimester of their partner's pregnancy until 6 weeks post-partum [13,14]. Participants were identified through the antenatal clinic at Joondalup Health Campus (JHC). JHC incorporates both public and private hospitals and is located in the North Metropolitan region of Perth, Western Australia. This study was reviewed and granted ethics approval by the JHC Human Research Ethics Committee. Data were collected between 2013 and 2015.

Participants

Expectant fathers, who were the acknowledged father of the child, were recruited via the pregnant mother on her attendance at antenatal clinic after 20 weeks gestation. Recruiters were qualified medical practitioners or midwives affiliated with the AFS. The mother's consent for the father's participation was sought and participants were provided an information brochure outlining the requirements of involvement to enable informed consent to enter the trial to be given. Individual consent was obtained from each participant. Exclusion criteria were: pregnancy complicated by known foetal anomaly, fathers with limited

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Received June 09, 2016; **Accepted** June 27, 2016; **Published** June 30, 2016

Citation: Prosser N, Petersen R, Quinlivan J (2016) Survey of Australian Father's Attitudes towards Infant Vaccination: Findings from the Australian Father's Study. Primary Health Care 6: 228. doi:10.4172/2167-1079.1000228

English language abilities, not acknowledged as biological parent status.

Data sources

This mixed methods study was a predefined sub-study of the AFS collected between January and July 2014. The number of new antenatal bookings in this recruitment period was 981. This is a longitudinal study of Australian men who are the acknowledged father of the unborn child of their pregnant partner. Data were collected via a self-reported questionnaire consisting of demographic details including: age, country of birth, living arrangements with the mother, employment status, education level, other children, and smoking status [13,14]. A Likert scale was used to assess attitudes to infant vaccination and a self- reported level of knowledge about pregnancy issues. In addition, participants were asked to explain their attitude toward vaccination via an open-ended question. Qualitative information was extracted from written comments. Three questionnaires were administered in the antenatal period to be filled in six weeks prior to birth (Q1), immediately post partum (Q2) and six weeks post partum (Q3). Overall return rate of questionnaires following consent is 79% with individual return rates of 85%, 79% and 73% for Q1, Q2 and Q3 respectively. The data for the vaccination study comes from Q1.

Variables

Participant responses from the Likert scale regarding attitudes to vaccination were assigned as either 'Positive', 'Neutral' or 'Negative' for analysis.

Bias

Potential sources of bias in this self-reported study are information bias, selection bias, non-response bias, and response bias. Attempts to minimise these sources of bias included: Extended data collection period, standard response forms, de-identified and confidential respondent surveys.

Sample size

The primary hypothesis was that education would positively influence attitudes towards infant vaccination. Fathers with a positive attitude towards infant vaccination would have undertaken more formal years of education compared to those with a negative or neutral attitude. We estimated 80% of fathers with a positive attitude would have 12 or more years of education, whereas only 30% of fathers with a neutral or negative attitude would have this degree of education. Assuming two samples, with alpha error of 0.05, beta of 0.2 and power of 80%, then 22 expectant fathers with negative or neutral attitude towards vaccination were required to test the hypothesis.

Given the percentage of 12-15 month-olds fully vaccinated in Australia ranges from a high of 92.3% to a low of 86.2%, and rates of specific conscientious objection ranged from 0% to 7.1% across different Medicare Local catchment areas, we estimated 6% of expectant fathers might have a negative or neutral attitude towards vaccination [15,16]. We therefore recruited 407 expectant fathers into the vaccination study.

Statistical analysis

Statistical analysis was performed using Minitab® (version 16, University of Melbourne). Difference in attitudes to vaccinations was assessed using Chi Square test or Fisher Exact test if cell size was less than 5. Responses to the open-ended questions were assessed using inductive content analysis. Responses were independently read by the principal researchers and an abstraction process used to summarize and conceptualize the overall meaning and implications of the comments. Open coding was performed to maximize the number of headings in order to describe all aspects of the content [17].

Results

Participants

407 expectant fathers were recruited into the vaccination study.

Descriptive data

The demographic characteristics of the study participants are summarised in Table 1. Of the 407 Fathers included in the study, the mean age was 30.4 years, (SD 6.7). Of these, 147 (41%) indicated Australia was not their country of birth, a figure higher than the average Australian overseas born general population (28.5%) [18]. Most men reported that they were living with the mother of the child (94.1%) and had achieved an education level of year 12 or higher (82.5%). Nearly 10% of the fathers reported they were unemployed or in retraining. Of those who were employed, 66.3% worked more than 40 h per week.

Outcome data

Table 2 summarises demographic details, vaccination knowledge, and information sources regarding pregnancy issues by attitude towards vaccination. The majority of participants had a positive attitude towards infant vaccination (N=357, 89%). However, 9% (N=35) of fathers had a neutral and 2% (N=8) a negative attitude. Seven participants did not indicate their attitude to vaccination and were treated as missing data (not included in table).

The key finding was that fathers with neutral and negative attitudes towards infant vaccination reported self-assessed higher levels of knowledge of vaccination issues ($p=0.01$ and <0.001 respectively). These same men also reported they were more likely to have gained their knowledge from the Internet than from a healthcare professional (both $p<0.001$).

Qualitative data

Of the 357 men with positive attitudes to vaccination, 66 commented on their beliefs, the main themes identified were: Vaccination as

Variable	Australian Fathers Study N=407
Age in years Mean (Std. Dev.)	30.4 (6.7)
Country of birth N (%)	
Australia	227 (56%)
Overseas	180 (44%)
Relationship living arrangements N (%)	
Living with mother	383 (94.1%)
Not living with mother	17 (4.2%)
Level of education N (%)	
Less than 12 years of school	65 (16%)
12 years of school or more	336 (82.5%)
Employment N (%)	
Not currently employed	39 (9.6%)
Yes and work locally	296 (72.7%)
Yes and fly in fly out worker	65 (16%)
Hours worked each week	
Less than one hour a week	16 (4%)
1-15 h per week	5 (1.2%)
16-40 h per week	108 (26.5%)
More than 40 h per week	270 (66.3%)
First time father N (%)	
Yes	210 (51.5%)
No	195 (48%)

Table 1: Demographics of study cohort.

	Positive attitude N=357 (87.7%)	Neutral attitude N=35 (8.6%)	Negative attitude N=8 (2%)
Age Mean (SD) p-value	30.43 (6.7)	30.14 (6.8) 0.55	29.85 (5.0) 0.21
Country of birth N (%) Australia Overseas p-value	 210 (59%) 147 (41%)	 14 (40%) 21 (60%) 0.03	 3 (37.5%) 5 (62.5%) 0.28
Relationship with mother of baby N (%) Living with mother Not living with mother p-value	 338 (94.7%) 17 (4.7%)	 35 (100%) 0 (0%) 0.38	 6 (75%) 2 (25%) 0.06
Level of education N (%) Less than 12 years of school 12 years of school or more p-value	 60 (16.8%) 296 (82.9%)	 4 (11.4%) 31 (88.6%) 0.63	 1 (12.5%) 7 (87.5%) 1.00
ATSI Race N (%) Yes No p-value	 55 (15.4%) 301 (84.3%)	 8 (23%) 27 (77%) 0.24	 1 (12.5%) 7 (87.5%) 1.00
Employment type N (%) Not currently employed Yes and work locally Yes and fly in fly out worker p-value	 31 (8.7%) 264 (74%) 61 (17%)	 8 (23%) 25 (71%) 2 (6%) 0.015	 2 (25%) 5 (62.5%) 0 (0%) 0.13
Hours worked per week N (%) 0-1 h a week 1-40 h per week 40+ h per week p-value	 13 (4%) 104 (28.5%) 239 (67%)	 3 (9%) 6 (17%) 26 (74%) 0.45	 2 (25%) 2 (25%) 3 (37.5%) 0.23
Smoker N (%) Yes No p-value	 92 (25.8%) 262 (73.4%)	 5 (14%) 30 (86%) 0.15	 4 (50%) 3 (37.5%) 0.08
First time father N (%) Yes No p-value	 188 (53%) 165 (46%)	 18 (51%) 17 (49%) 0.86	 2 (25%) 5 (62.5%) 0.26
Self-assessed knowledge of vaccination Likert scale 0-10 Mean (Std Dev) p-value	 6.6 (1.7)	 7.7 (0.9) 0.01	 9.2 (0.2) <0.0001
Source of knowledge N (%) * Healthcare staff * Internet * Friends and family * Other p-value	 254 (71.2%) 23 (6.4%) 65 (18.2%) 15 (4.2%)	 15 (43%) 18 (51%) 2 (6%) 0 (0%) 0.001	 0 (0%) 7 (87.5%) 1 (12.5%) 0 (0%) <0.0001

Table 2: Differences between fathers with positive versus neutral or negative attitudes toward infant vaccination.

medical advancement, health benefits, anger towards those who do not immunise and the importance of high rates of vaccination. No participants who reported neutral feelings towards vaccinations commented on their viewpoint. Of the 8 participants with a negative attitude towards vaccinations, all commented on their decisions, with the main themes identified being: risks of vaccination, persecution, and the redundancy of vaccinations.

Advancement of modern medicine

A number of respondents commented that they believed vaccinations were a demonstration of the progress of medicine and a sign of an advanced society. One participant wrote:

"I'm going to make sure my child is vaccinated. When you think back how entire families were wiped out, in the old cemeteries and such, I mean why you wouldn't vaccinate your child. They are progress."

Another participant wrote:

"Vaccines are one of the wonders of modern medicine."

Health benefits

Many expectant fathers felt that vaccinations were essential and saved lives and unvaccinated children were at risk.

"Everyone knows vaccines save lives. Those parents who don't vaccinate their children put all other children at risk."

Another father discussed the risk versus benefit of vaccinations

"The side effects listed are pretty mild – sore arm, irritable for a few hours. The benefits are huge. It can save your child's life or stop them getting deaf or brain damaged. I know the baby's not here yet but already I feel very strongly protective. I will do anything to reduce the risk of my child being hurt."

Anger towards those who did not vaccinate

A common theme expressed by some fathers was anger towards people who did not vaccinate their children because it placed their own child at increased risk.

"I read abut (sic) a baby that died cause a mother took her unvaccinated child to day care. That's crazy. If not vaccinated you (sic) kid can die. If that happened to me I'd want those parents to pay. Maybe they should go to prison or something because really, they've killed that child by their actions."

This theme was also reflected by expectant fathers with a positive attitude towards vaccination whose partners, the baby's mother, had a negative attitude. Two participants in this situation wrote detailed comments about their frustration that hospital staff ignored them because the mother's views carried greater weight. In one case where the mother had signed a "Refusal of vaccination" form the father wrote:

"Why should my child be put at risk because we disagree about this? Why does her opinion matter more than my own? I want Hepatitis B and Vitamin K injections at birth. She thinks they are dangerous. Father's opinions and values don't count. We are ignored – even when we are the one saying and doing the right thing and agreeing with the doctors. I was so angry that the midwife ignored me I had to leave the room"

Another father who separated from his partner after enrolling in the study wrote in his questionnaire:

"She's bitter about me leaving and taking it out on our baby. She knows I want him to have all the needles and tests. I asked the hospital to give them but they said only the mother can say so. Why is that the case? I mean, why is her word worth more than mine? It's my baby as much as it is hers. I just want what is best for my baby. She just wants to hurt me."

Importance of high vaccination rates

Another common theme addressed was the importance of high vaccination rates in protecting the community. One participant wrote:

"You need most people to have injections so everyone is safe. Babies are only safe if everyone is injections (sic)."

Risks of vaccination

In the sub-group of fathers with a negative attitude towards vaccination, one theme was that the risks of vaccination outweighed benefits. One participant wrote:

"The absolute risk of our child contracting a disease is very low. The risks of vaccination disease such as autism and ADD are high."

Another participant agreed

"There are 100s of studies that show a link between vaccines and poor outcomes for children. Papers about autism, nerve damage, immune damage, cancer and death (sic). I mean you risk killing your child just to supposedly keep it safe from disease, but you give it a disease instead. Even if you don't get a bad event, the needles hurt your child and cause them to suffer."

Persecution

Some participants felt that people who conscientiously objected to immunization where being unfairly punished for their choices.

"The government overstate this issue and try to make you feel guilty following your own free will."

"Now the government penalises parents like us. We have to fill in extra forms for childcare. Just because we have gone to the trouble to look into it ourselves and not be mindless numbers we get penalized."

Redundancy of vaccines

One participant reflected on the necessity of vaccinations.

"…vaccines are not needed anymore. The disease's they protect against have basically disappeared. One paper said no cases of diphtheria had been seen in the world for decades so why do you need a vaccine against it".

Discussion

This paper evaluates the attitudes of Australian fathers towards vaccinations and factors that may be associated with particular attitudes to vaccination.

We found that the majority of fathers in the survey were supportive of infant and childhood vaccinations, while a small proportion demonstrated a neutral (9%) or negative (2%) attitude.

Participants with a neutral or negative attitude towards vaccination felt they were better informed about vaccination compared to fathers with a positive attitude, self-reporting higher levels of knowledge ($p=0.01$ and $p<0.001$ respectively). However, while there was social, financial and educational parity across the groups, fathers with neutral and negative attitudes were more likely to use the Internet as a source of knowledge rather than a health care professional (both $p<0.001$).

Vaccinations have made a significant contribution to the global health picture yet despite their success; there has been a notable decline in voluntary uptake. Their very success may well have contributed to the reduction in uptake secondary to a newfound complacency toward vaccine-preventable diseases. Disease is no longer present as a reminder to vaccinate, thus the perceived risk of the severity of diseases is low [9,11,19].

Consumer confidence in vaccines can also challenge uptake, with concern for safety and side effects driving a reluctance to vaccinate. Adverse publicity in the media has previously raised questions about safety, efficacy and side effect profiles result in lack of trust by some parents [10,11,20,21]. Some studies have suggested that socioeconomic factors such as level of education and income were more important than parental perceptions in vaccination uptake by parents [11,12,22]. Our study did not reflect this, with no statistically significant difference in education and employment outcomes between fathers with positive, neutral or negative attitudes ($p>0.05$).

Conflict can arise where there are two opposing, yet strongly held opinions with regards to the health care decisions of the child. Fathers may feel disregarded by perinatal staff and thus excluded from a unified parental team when the wishes of the mother take preference over those of the father.

Overwhelmingly, fathers reported that benefits of protection against disease outweighed side effects and chose to endorse vaccination. These fathers were more likely to accept advice on vaccination from health care providers [10-12,20].

Limitations

This study has several limitations due to its self-reporting design, which may introduce response and non-response bias. However, this is limited by the adequate sample size to obtain information on fathers with neutral and negative attitudes. This study was undertaken in a single public hospital in Perth, Western Australia, which may reduce the generalizability of the results. This study does not link attitudes with actual vaccine uptake and may not differentiate between partial uptake or late vaccine adaptors.

Conclusion

This paper emphasises the importance for health professionals to be able to provide up to date information in the face of vast quantities of material available for public consumption on the Internet. Their role as a reliable source of information should not be underestimated. Where possible, involving fathers in discussions around the benefits of vaccinations may help to increase vaccination rates.

Acknowledgement

The AFS is registered at the Australian and New Zealand Clinical Trials Registry with the number ACTRN 12613001273774 and the trial website is located at http://australianfathersstudyresearchtrial.weebly.com

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