Master’s thesis - one year

*Magisteruppsats*

Public Health Science

Influencing factors and sources on the opinions of MMR vaccination in Australia - A cross-sectional study

Katrin Emelie Forslund
MID SWEDEN UNIVERSITY

Institution for Health Science

Examiner: Katja Gillander Gådin, katja.gillander-gadin@miun.se
Supervisor: Ewy Olander, olanderewy@gmail.com
Author: Katrin Emelie Forslund, kafo1401@student.miun.se
Degree programme: Masters programme (one year) in Health Science, 60 credits
Main field of study: Public Health
Semester, year: Spring semester (VT), 2016
Abstract

**Background:** The coverage of MMR vaccination (measles, mumps and rubella combination) for children has been declining in Australia and the percentage of children who have not been vaccinated on the basis of parental vaccination rejection is rising. Due to this issue, the Australian Parliament passed an amendment to the social-security law last year, November 2015. The new “No Jab, No Pay” legislation has been effective since 1 January 2016. The legislation removes the right from parents or guardians to claim any conscientious objection based on religious or ideological reasoning.

**Purpose:** The purpose of this study was to gain an insight into what factors and sources have an influence on the opinion on MMR vaccination for children among individuals in Australia.

**Method:** A cross-sectional study was conducted and the data collection was done through a web-survey. The data was collected between the 2-4 May 2016 and the study included participants between he ages of 20 and 60 years of age which were based in Australia.

**Result:** The response group found sources from the medical community, government and scientific community had the most influence on the respondents and were also considered the most trustworthy by the group. As a socioeconomic factor the education level of the respondent was found to be most significant.

**Keywords:** Measles mumps and rubella vaccination, No Jab No Pay, socioeconomic factors, opinions, web-survey

Abstrakt

**Bakgrund:** Täckningen av MPR vaccination (mässling, påssjuka och röda hund kombination) för barn minskade i Australien och andelen barn som inte vaccinerades på grund av föräldrars avslag av har ökat. På grund av det här problemet, beslutade det australiska parlamentet, förra året i november, en ändring av socialförsäkrings lagen. Den nya "No Jab, No Pay" lagstiftningen trädde i kraft den 1 januari 2016. Lagstiftningen tar bort rätten för föräldrar eller vårdnadshavare att göra anspråk att vägra barns vaccination på grund av religiösa eller ideologiska resonemang.

**Syfte:** Syftet med denna studie var att få en inblick i vilka faktorer och källor hade en inverkan på yttrandet om MPR vaccination för barn mellan individer i Australien.

**Metod:** En tvärsnittsstudie genomfördes och datainsamlingen gjordes genom en webbenkät. Studiens data samlades in mellan den 4-6 maj 2016 och studien innefattade individer i åldrarna 20-60 år som var bosatta i Australien.

**Resultat:** Inom enkätens resonsgrupp visade det sig att källor från det medicinska samfundet, regeringen och forskarvärlden hade störst inflytande och ansågs vara de mest pålitliga källor enligt gruppen. Utbildningsnivå var den mest betydelsefulla faktorn.

**Nyckelord:** Mässling påsjuka och röda hund vaccination, No Jab No Pay, socioekonomiska faktorer, åsikter, webbenkät
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Introduction

The vaccination for children with the measles, mumps and rubella (MMR) combination vaccine has been a debated topic in recent years and globally the vaccination coverage against measles has dropped significantly (World Health Organization, 2016). A country where this topic has been prevalent in recent years is Australia. The problems the Australia has faced in regard to the drop in vaccine coverage in children has led to the introduction a new law in the beginning of 2016, which excludes vaccine hesitant parents from receiving child benefits (Klapter & Grove, 2015). The percentage of children under seven years who have not been vaccinated due to parental vaccination rejection has according to the Australian Childhood Immunisation Register (ACIR) risen by 1.5% between the years 1999 to 2014 (Australian Childhood Immunisation Register, 2016b). Due to this development it is therefore important to understand the opinions on MMR vaccination for children in Australia, as well as influencing factors and sources on these opinions.

Background

There are different types of vaccines that help to build up the immune system against infectious diseases (Shoenfeld, 2015). When a vaccine is given, the intention is for the body to produce antibodies, thereby becoming resistant to the virus or bacteria. Measles, mumps and rubella, commonly shortened to MMR, is an attenuated vaccine, which contains microorganisms of the disease (Shoenfeld, 2015). According to the World Health Organization (WHO) an increased vaccination coverage is one of the most important and cost-effective ways to improve global public health and the WHO estimates that 17.1 million lives have been saved since 2000 due to the increased vaccination coverage for MMR (World Health Organization, 2014b).

Measles is one of the leading causes of death worldwide and in 2014 measles was the cause of death for 114,900 individuals globally (World Health Organization, 2016a). The rate of measles vaccination helped to prevent 79% of measles-related deaths in the years between 2000 and 2014 (World Health Organization, 2016a). However, due to
gaps in the vaccination programs measles outbreaks are still a big issue in the region of the Americas and Western pacific region (World Health Organization, 2014b). Compared to these regions, Australia has a rather low rate of measles infections however, being part of the Western Pacific region it is important for the country to keep its level of MMR vaccination high to avoid any spread of measles.

The measles vaccine, which is widely used today, was developed in the late 1960s, and since 1971, the vaccine has been combined with mumps and rubella vaccines to create the MMR vaccine (Centre of Disease Prevention and Control, 2014). Rubella is a contagious disease with a mild infection which occurs in children, however the rubella virus can cause congenital defects in infants if a pregnant woman is infected (World Health Organization, 2015c). Each year, 100,000 children are born worldwide with congenital birth defects due to rubella (World Health Organization, 2015c). The Global Measles and Rubella Strategic Plan 2012-2020 by the WHO aims to eradicate measles and rubella in at least five of its regions by 2020 (World Health Organization, 2016b). Mumps is considered a rather mild disease for children but can cause more severe complications for adults. If not vaccinated, an individual can experience complications such as viral virus meningitis, deafness and inflammation of testicles or ovaries (Centre for Disease Control and Prevention, 2014).

**MMR vaccination in Australia**

According to WHO data, a 93% coverage against measles was recorded among 1-year olds in Australia (World Health Organization, 2014a). Data from 2001 to 2013 shows a coverage of 94%, which points to a slight decline in measles coverage among 1-year olds (World Health Organization, 2015). The National Immunisation Program Schedule by the Department of Health in Australia specifies that children should be immunised against measles, mumps and rubella with the combination MMR vaccine at 12 months (Department of Health, 2015). Recent data published by the Australian Childhood Immunisation Register in 2015 shows that 2 years olds, between 25 and 27 months, had a 91,15% coverage on MMR in all of Australia. Among 5 years olds, between 60 and 63 months, the percentage of children vaccinated against MMR was 93,14% (Australian Childhood Immunisation Register, 2016a).
The Australian Parliament passed an amendment to the social-security law last year, November 2015. The new “No Jab, No Pay” legislation has been effective since 1 January 2016. The legislation removes the right from parents or guardians to claim any conscientious objection based on religious or ideological reasoning. According to the No Jab No Pay legislation parents and care takers who do not follow the Australian Immunisation Schedule on time will be unable to claim any Child Care Benefit, Child Care Rebate, Family Tax Benefit or other payments for families (The Parliament of the Commonwealth of Australia, 2015). From the 1 January 2016, the Australian Childhood Immunisation Register is required to record all children being vaccinated, up until they are 20 years of age.

**Shaping the opinions on MMR vaccination**

There are events and factors that have shaped the opinions on MMR vaccination and this section of the study will give an outline of some of these. An event that caused a decline in the public trust of the MMR vaccine was an article by Wakefield et al. (1998), which was published by the Lancet in 1998. In the article Wakefield and his colleagues drew the conclusion that the MMR vaccine was connected to the development of autism in children who had been immunised with the vaccine. Ever since the release of this research there have been several counter arguments which state that Wakefield’s findings are not true and that no epidemiological connection can be made between the MMR vaccine and autism (Taylor, Miller, Farrington, Petropoulos, Favot-Mayaud, Li & Waight, 1999; Farrington, Miller & Taylor, 2001).

A systematic literature review conducted by Brown et al. (2010) explores the common underlying factors in the decision making for combination vaccines for children, such as MMR. The literature review included thirty-one studies and identified seven main factors. The factors connected to a lower vaccine rate included: concerns of the effect and safety of the vaccine, perceived vaccine effectiveness, belief that vaccine causes autism, as well as own and others experiences with vaccines. Parents play a central role when it comes to the use of vaccines and immunisation of children and adolescents. According
to Brown et al. the decision of parents to immunise themselves and their children has a large impact on the coverage of immunisation (Brown et al., 2010).

Brown et al. also points to the socioeconomic factors which are involved and suggests that parents with lower income and education immunise their children less in comparison to parents with a higher income and education level (Brown et al., 2010). In Australia the Australian Childhood Immunisation Register collects data on the conscientious objectors which have refused vaccination for religious or ideological reasons. The most recent data, which was collected in 2015, shows that 1.34% of children in Australia were not vaccinated on the basis on conscientious objection (Australian Childhood Immunisation Register, 2016b). In the previous year 1.77% of children were not vaccinated due to conscientious objection, which is the highest percentage recorded since 1999 (Australian Childhood Immunisation Register, 2016b).

**Risk perception**

Risk is assessed by its probability and severity in the case of a public health event and studies show that the amount of exposure to communication including negative messages on vaccination, has an effect on the recipients trust in the vaccination (Haase et al., 2005). The message of anti-vaccination information is often delivered as an emotional narrative focusing on the negative outcomes of vaccinating, such as autism etcetera, especially in children (Haase et al., 2005). Another study shows that parents generally are influenced by the dread and unknown connected to the outcomes of the disease or vaccination (Bond & Nolan, 2011). Studies show that parents who do not immunise their children are generally optimistic that their child will not contract the disease or think it is improbable for the child to suffer the worst effects of the disease (Haase et al., 2005).

**Influence of media and information**

The influence of media and communication mechanisms through media outlets, such as social media and the internet, are reoccurring subjects on the vaccine debate. A study shows that the consumption of vaccine-critical information through biased websites in-
fluences the perception of vaccines in a negative way and that the participants in the study were highly influenced by the critical information which was provided (Betsch et al., 2010). Studies also show that sentiments against vaccines are often grounded in distrust against the health system or government. Dissatisfaction in information and knowledge about a vaccine are also common reasons for distrust in vaccines (Brown et al., 2010). Media and spreading of information through official sources such as the government and scientific community are important tools to raise awareness among groups. The use of communication tools in public health can help the understanding of an issue and help the behavioural change. Communication tools range from traditional tools such as letter or mail based information, to modernised internet based tool such as social media and the web based sources (European Centre for Disease Prevention and Control, 2010). In order for a message to reach the right audience the tools need to be adjusted according to the needs of a certain group (European Centre for Disease Prevention and Control, 2010).

A theoretical model which is helpful in the understanding the influence of communication channels in regard to health behaviour is the communication behaviour change model by McGuire, referenced in Nutbeam (2010). The model includes five communication factors: source, message, channel, receiver and destination. According to this model, the source has as a strong influence on the credibility and reception of the message. The influence of a message can also vary in regard to who sends the message. An example of this is the varying influence a message has depending on if the sender is the government, official figures, celebrities, or non-government organisations (Nutbeam, 2010, p.40). According to this model the content of the message is also of importance, as it has to match well with the recipients in various groups. The third concept, channel, emphasises the importance of the media channel which is used to spread a message. The fourth concept focused on the role of the receiver of the message (Nutbeam, 2010, p.40-41). It is important to tailor the information to the audience and take into account the social and demographic factors such as age, gender, income et cetera. The fifth concept of the model focuses on the destination of the message and desired outcome (Nutbeam, 2010, p.40-41). This theoretical model will serve as a useful base for the analysis of survey results.
Problem statement

As outlined in the introduction and background chapter, the MMR vaccine coverage has declined among children in Australia. Health behaviour can be influenced by many factors such as the information that is consumed as well as the social environment (Gowda & Dempsey, 2013). As presented earlier, current research shows that factors such as socioeconomic status and the social environment have an influence on the decisions on MMR vaccination. To understand this issue further this study explored the opinions on MMR and which sources were used to gather information about MMR vaccination, and how trusted these sources are. This helped in understanding which factors influence the decisions within this group of respondents. The McGuire communication model helped in the understanding of how individuals were influenced and also to understand how this can be improved for future work with this issue in the public health area and promotion of MMR vaccination.

Purpose statement

The purpose of this study is to gain an insight into what factors and sources have an influence on the opinion on MMR vaccination for children among individuals in Australia.

Research question

• What are factors and sources that influence individuals in Australia on their opinion of MMR (measles mumps, rubella combination) vaccination for children?
• Are socioeconomic factors related to the level of trust in MMR vaccination?

Method

A quantitative method was used for the collection of the data. A cross-sectional study was done and a web-based method was used for the data collection by conducting a web-survey. A cross-sectional design aims to take a snapshot of a population in a certain time on a certain issue (Bryman, 2012, p.57), which suits the aim of this thesis well. The web-survey was drafted and distributed via SurveyMonkey, which is a company specialised in online surveys. According Bryman (2012) there are advantages and disadvantages to using web-based surveys. The advantages are that it is possible to reach
many individuals easily and in a short time frame, which is both cost and time effective. A web-based survey is not tied to geographical boundaries and can be accessed by any individual with access to a computer/smartphone with access to internet. Another benefit is that the data which is collected can be collated quickly and accurately. According to Bryman websites like SurveyMonkey offer a good design and functions for the development and destination of survey for academic research (Bryman, 2012, p. 671). The use of SurveyMonkey requires a membership fee as well as a fee for the survey distribution, these fees are aimed to allow access to the user database, however the survey respondents received no monetary compensation from the author.

Selection of participants

The web survey was setup to include a specific population group within Australia of approximately 100 individuals which are registered within the SurveyMonkey system. The inclusion criteria were specified by the author to only include individuals living in Australia, who are between the age of 20 and 60 years, of any education level, income level or gender. The web survey was sent out to a random selection of 149 individuals within the SurveyMonkey system which were available to take the survey. The participation in the SurveyMonkey survey was on a voluntary basis and the participants were not charged any fee or offered any monetary compensation for signing up to SurveyMonkey or by answering this survey. The number of individuals who completed the survey were 110, which shows a response rate of 75.8%. The objective for the data collection was to receive 100 complete surveys, as this was considered to offer a balanced distribution of gender and age. An additional nine surveys were submitted in the system which was considered beneficial to the data set. In the review of the data by the author, one survey was excluded due to speeding. This issue will be discussed further in the method discussion.
Data collection

The survey contained eleven closed questions. Four questions, were generated automatically through the SurveyMonkey system, and provided information on education level, annual household income and location in Australia. Three survey questions were setup as multiple choice aimed to find out about the age and gender of the participants (Attachment 1). In one of the multiple choice question, the participants were asked to specific if they were parents or if they were planning of having children in the near or far future (Attachment 1). Eight questions aimed to measure the opinion of the participants with the help of Likert-Scales (Polit-O’Hara & Beck, 2004). Each Likert-scale was divided into four answer options in order to avoid the selection of a neutral answer (Polit-O’Hara & Beck, 2004). Three of the scales offered the answer option “don’t know”.

Piloting

According to Bryman it is important to test the survey especially in the case of a self-completion questionnaire (Bryman, 2012, p.232-233). This can point to any misunderstanding or errors in the survey. A piloting phase was conducted with a smaller sample of four selected participants, which helped to point out errors or textual misunderstanding. One of the pilot participants is a native english speaker. The survey content was also shared with the supervisor in several stages of the survey construction. The feedback was used for the improvement of the survey in regard to the setup of questions and question formulation.

Data analysis

The results of the survey responses were first summarised and complied in the Survey Monkey survey system. The results of the survey were displayed in graphs and frequency tables including the overview of participants, percentage and weighted averages. The basic statistics such as the mean, median and standard deviation of each variable were also displayed together with the response data. In a second step, the survey data was compiled in an Excel sheet and exported to the Statistical Package for Social Science for more in depth statistical analysis by conducting univariate and bivariate analysis.
The analysis included the creation cross tabs, comparing of results and Pearson Chi2-tests. The p-value has to be below 5% (alpha value : <0.05) in order for the test to have statistical significance. In coding of the data in SPSS the answer options were assigned the numbers 1 to 4 e.g. “no influence” was assigned 1 and the an answer option such as “extremely trustworthy” was assigned 4. For the purpose of the data analysis the categories for parents were recoded to focus on two categories “No parent” and “parent”, however no this gave no significant results.

Ethical considerations

Ethical considerations were made according to the guidelines of the Swedish Research Council and CODEX (Vetenskapsrådet, 2016; CODEX, 2016). The participation in the survey conducted was on a voluntary basis and the information submitted in the survey is handled as confidential information (Vetenskapsrådet, 2015). To ensure the participants were informed of the aim, content and confidential nature of the results a consent form was sent out to all participants by email before the participation the survey (Attachment 2). Since the survey was facilitated through the survey company, SurveyMonkey, the participants have, as part of the consent form, received information and links to the privacy and security of SurveyMonkey. The questions in the survey were developed and worded to not have any influence on the opinions of the survey participants. The survey participants were not asked to provide any sensitive information and were informed that the aim of the survey is merely exploring the views of the respondents at that point in time.

Results

In total, 109 responses of a total of 110 responses were included in the final survey result. One answer was excluded due to inappropriate response to the survey questions as the participant was speeding through the survey. The structure of the results presentation shows results regarding the participants demographic. Subsequently, the results are presented in the order of the survey questions.
Survey demographic

The results of the survey show that the distribution of gender was balanced. The total number of women participating was 58 which equates to 53% of the total group. The total number of men was 48, which equated to 44% of the total group. The category ‘Other’ was given as an option for gender, which was selected by 3 individuals (3%). The distribution between the age groups is balanced, however the 30-39 years age group was the largest with 31% of the total. The participants between 50-59 years were the second largest group with 27%. The group with 20-29 years of age were 23% and the 40-49 years olds were 18% of the total participants. Three percent of the participants reported that they were over 60 years old. The age of the participants showed no statistical significance.

The survey participants were asked to specify if they have children, if they do not have children but are planning to having children in the future. The responses showed that 50% specified that they have children. The respondents who are planning on having children in the near future were 5.5% and 15.6% plan on having children sometime in the future. The respondents had the option of answering the question with “no”, which was selected by 28.4% of respondents. The parental status showed no statistical significant in how the other questions of the survey were answered.

Questions regarding the demographic of the survey groups provided an insight into the annual household income, highest completed education level and the state of Australia the survey participants live in. The annual household income was decided into in seven groups with the option of selecting “prefer not to answer” which was selected by 19% of the respondents. The percentage of responses in each category were 7% ($0 to $29,999 AUD), 14% ($30,000 to $59,999 AUD), 20% ($60,000 to $89,999 AUD), 13% ($90,000 to $119,999 AUD), 11% ($120,000 to $149,999 AUD), 5% ($150,000 to $179,999 AUD), 11% ($180,000 or more AUD). The respondents were asked to specify which was the highest education level they completed. The categories ranged from “no high school diploma”, “high school”, “undergraduate”, “postgraduate”. The responses in each category were 5% (no high school diploma), 31% (high school), 39% (undergraduate), 26% (postgraduate).
Confidence in MMR vaccination

The questions 4 and 5 were used to assess the level of confidence towards the MMR vaccination and to what level the respondents assess the likelihood of the MMR vaccination causing negative side effects (Table 1; Table 2).

Table 1. Frequency table - Question 4: “How confident are you the MMR vaccine (measles, mumps and rubella combination) is beneficial for children?”

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all confident</td>
<td>7.3 %</td>
<td>8</td>
</tr>
<tr>
<td>Somewhat confident</td>
<td>11.9 %</td>
<td>13</td>
</tr>
<tr>
<td>Quite confident</td>
<td>25.7 %</td>
<td>28</td>
</tr>
<tr>
<td>Extremely confident</td>
<td>55.0 %</td>
<td>60</td>
</tr>
</tbody>
</table>

Table 2. Frequency table - Question 5: “How likely do you think it is for MMR vaccination to cause negative side effects?”

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all likely</td>
<td>60.6 %</td>
<td>66</td>
</tr>
<tr>
<td>Somewhat likely</td>
<td>30.3 %</td>
<td>33</td>
</tr>
<tr>
<td>Quite likely</td>
<td>0.9 %</td>
<td>1</td>
</tr>
<tr>
<td>Extremely likely</td>
<td>8.3 %</td>
<td>9</td>
</tr>
</tbody>
</table>

Influence and trustworthiness of sources

In question six of the survey the respondents were asked to specify which sources influence their opinion about MMR vaccination. The scale options were “no influence”, “some influence”, “high influence” and “very high influence”. The respondents were asked to rate ten sources (Attachment 3). The sources with the highest percentage in the scale options “high influence” and “very high influence” were the sources doctors/public health nurses (37%), Australian government recommendations (20%), scientific articles and reports (22%) (Attachment 3). The sources with the highest percentage in the scale option “no influence” were Anti-vaccination sites, social media, newspaper/magazine and TV/radio (Attachment 3). Each option “don’t know” was selected by 4-7% respondents for each source. The results showed that there is a statistical significance with a p-value of .021 between the education level and the level of influence of gov-
ernment recommendations (Table 3). Respondents with a higher education level were more influenced by government recommendations (Attachment 3). Among the postgraduate group, 39% feel “highly influenced” or 35% “somewhat influenced” by government recommendations. The undergraduate group feel “highly influenced” (45.2%) or “somewhat influenced” (31%) by government recommendations (Table 3). Among the respondents with no high school diploma, do not feel influenced (20%) or somewhat influenced (60%), however 0% of the responses in this group answered to high or very high influence (Table 3).

Table 3. Crosstab for Pearson Chi2-test - Question 6: “What are the sources that have influenced your opinion about MMR vaccination?” - Australian Government Recommendation and Education level

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>No high school diploma</th>
<th>High school</th>
<th>Undergraduate</th>
<th>Postgraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Government recommendations (e.g. Department of Health)</td>
<td>No influence</td>
<td>20.0%</td>
<td>17.6%</td>
<td>4.8%</td>
</tr>
<tr>
<td></td>
<td>Some influence</td>
<td>60.0%</td>
<td>11.8%</td>
<td>14.3%</td>
</tr>
<tr>
<td></td>
<td>High influence</td>
<td>0%</td>
<td>26.5%</td>
<td>45.2%</td>
</tr>
<tr>
<td></td>
<td>Very high influence</td>
<td>0%</td>
<td>29.4%</td>
<td>31.0%</td>
</tr>
<tr>
<td></td>
<td>Don’t know</td>
<td>20.0%</td>
<td>14.7%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

P-value: .012*

*Significant with P-value <0.05
In question seven of the survey the respondents were asked to specify to what level they find the ten sources listed in the previous question, to be trustworthy. The scale options were “not trustworthy”, “somewhat trustworthy”, “quite trustworthy” and “extremely trustworthy”. The survey results showed that the sources which were selected as “extremely trustworthy” were doctors and public health nurses (45%), scientific articles/reports (38%), and Australian government recommendations (32%) and health journals (25%). Sources which were selected as “not trustworthy” were social media (65%), anti-vaccination sites (57%), newspapers/magazines (45%), and TV/radio (41%) (Attachment 4). There was a significant difference between the trust levels in scientific material, such as health journals which showed a p-value of .030 in relation the education level of the participants. Scientific reports/articles and education level showed a p-value of .000. Australian government recommendations and education level showed a p-value .005. Doctors and nurses in relation to the education level showed a p-value of .005. In regard to doctors and public health nurses the highest percentage of participants responded within the option “not trustworthy” and were those with no high school education (40%). The highest percentage of respondents in the answer option “extremely trustworthy” were those who completed undergraduate level (50%) or postgraduate level (57.1%).

In question eight the participants were asked to specify to which level the factors influence them (Table 4). The perceived “effectiveness of vaccine” was selected to have “very high influence” by 35% of the survey respondents. Other factors that have a “very high influence” are the perceived safety of the vaccine (28%), personal experience (28%), government policies (23%) and immunisation requirements (19%) (Table 4). The respondents answered “no influence” in regard to social factors such as social network (43%), community (49%) and media (43%).
Table 4. Question 8 - How much do the following factors influence your opinion on MMR vaccination?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>No influence</th>
<th>Some influence</th>
<th>High influence</th>
<th>Very high influence</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social network (Family/trusted friends)</td>
<td>47 (43%)</td>
<td>34 (31%)</td>
<td>18 (17%)</td>
<td>7 (6%)</td>
<td>3 (3%)</td>
</tr>
<tr>
<td>Community (e.g. neighbours, work colleagues etc)</td>
<td>53 (49%)</td>
<td>38 (35%)</td>
<td>11 (10%)</td>
<td>3 (3%)</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>Immunization requirements (e.g at school, kindergarten etc)</td>
<td>16 (15%)</td>
<td>21 (19%)</td>
<td>46 (42%)</td>
<td>21 (19%)</td>
<td>5 (5%)</td>
</tr>
<tr>
<td>Government policies (e.g. &quot;No jab, no pay&quot; laws*) From 1 January 2016 childcare benefits will be removed from parents who do not immunise their children.</td>
<td>20 (18%)</td>
<td>21 (19%)</td>
<td>35 (32%)</td>
<td>25 (23%)</td>
<td>8 (7%)</td>
</tr>
<tr>
<td>Media</td>
<td>47 (43%)</td>
<td>40 (37%)</td>
<td>11 (10%)</td>
<td>6 (6%)</td>
<td>5 (5%)</td>
</tr>
<tr>
<td>Personal experience</td>
<td>16 (15%)</td>
<td>26 (24%)</td>
<td>35 (32%)</td>
<td>28 (26%)</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>Safety of vaccine</td>
<td>9 (8%)</td>
<td>18 (17%)</td>
<td>47 (43%)</td>
<td>30 (28%)</td>
<td>5 (5%)</td>
</tr>
<tr>
<td>Effectiveness of vaccine</td>
<td>5 (5%)</td>
<td>11 (10%)</td>
<td>48 (44%)</td>
<td>38 (35%)</td>
<td>7 (6%)</td>
</tr>
</tbody>
</table>

Influence of socioeconomic factors

The statistical results show that socio-economic factors such as annual household income level and the education level have an association with the remaining survey results. To measure the level of confidence in MMR vaccination the respondents were in question 4 of the survey (Attachment 1) asked to specify how confident they feel for the MMR vaccine to be beneficial for children. The answer option ranged from “not at all confident”, “somewhat confident”, “quite confident” to “extremely confident”. The statistical significance showed a p-value of .034 for income and a p-value of .001 for the education level. Lower education groups (no high school, high school diploma) felt less confident about the vaccine. The higher education groups, undergraduate and postgraduate level, were more confident in the benefits of MMR vaccination.
The respondents were also asked to specify how likely it is for MMR vaccination to cause negative side effects. The response options were “not at all likely”, “somewhat likely”, “quite likely” and “extremely likely”. Among the group with no high school diploma 60% answered “extremely likely”, however it is important to note that this option was chosen by 3 individuals. The education groups which had the highest percentages in the answer “not at all likely” were undergraduates (69%) and postgraduates (64.3%).

Discussion
This chapter of the study will include the results discussion and a discussion on the methodological tools which were used for the data collection and data analysis.

Result discussion
This study has explored the factors and sources that influence the response groups opinions. The results showed that the use and influence of sources had an association with the socioeconomic situation of the respondent, especially in regard to their education level.

According to the results, the respondents found the sources they consumed the most to also be the most trustworthy in providing information on MMR vaccination. The respondents found medical professionals, such as doctors and nurses, as well as government and publication from the scientific community to be the most trustworthy among the sources which were included in the survey, while the lowest amount of trustworthiness was placed on media sources. Comparing this to previous research suggests that scepticism towards the government and health system is a leading cause for reluctancy to vaccination (Brown et al., 2010), however the response group in this study seemed to trust the information coming from health services as well as their government. Research suggests that consumption of vaccination-critical information has an influence on the vaccine reluctance (Haase et al., 2005). Linking this to the communication behaviour change model of McGuire, it is interesting to look at the importance of the source and channel for the communication of a public health message. According to McGuire’s model, the source of the message plays a crucial role in how a public health message is
perceived by the receiving audience and its credibility (Corcoran, 2013). Judging by the responses, a large part of the group found information coming from the medical community, government and scientific community to have high credibility. The respondents saw themselves as less influenced by media sources such as TV/radio, newspaper/magazine, anti-vaccination sites and social media. The respondents also selected those sources to have low trustworthiness compared to other sources. The survey does not supply any information for why this could be the case but within the response group a higher level of trustworthiness and influence seems to be applied on official channels coming from government, as well as from medical and scientific community. According to McGuire’s model, it is also important to choose the right channel for communicating a public health message (Nutbeam, 2010, p. 40-41). The channels included in this study range from external sources such as media outlets such as newspaper, TV/radio, social media, internet to more interpersonal contacts with the doctor/nurse, and the social community of the respondents.

The results of the study also showed the influence of socioeconomic factors, specifically the education level of a respondent. The respondents with a high education level were more influenced by scientific sources and also considered these to be more trustworthy compared to the respondents with a lower education level. The level of expertise of a source and trustworthiness are important and can be connected to the similarities the source and receiver share (Kreuter & McClure, 2004). Applying this to the study means that the respondents with a higher education level saw the scientific community to have a high degree trustworthiness as they can identify with the origin of sources. These so-called structural similarities (Kreuter & McClure, 2004) may have to do with respondents of a higher education level being familiar with medical community, scientific publications or government recommendations as part of their university degrees or profession. The respondents with a lower education level may not share many similarities with the medical professions, scientific community or government and are therefore more critical of information coming from these sources (Kreuter & McClure, 2004). Noting these differences, it is important to adjust the source and message according to the receiver as different groups share similarities with a different sources.
Another factor that is important to consider according to McGuire’s model is the receiver of the public health message. In the study the receivers are the survey respondents. When it comes to the receiver of a message it is important to take factors such as age, gender, and socioeconomic factors like income and education level into account. Another dimension to consider is the experiences of a receiver. The results suggest that the respondents find “vaccine effectiveness” and safety to be important factors, however “personal experience” received a mixed result. The respondents can also be influenced by their social environment, however the group seemed to perceive the influence and trustworthiness of friends and family as rather mixed. The same applied in regard to how influences they felt by their social community such as other parents and neighbours.

Further research on this topic could help in the understanding of how MMR vaccination is perceived but also help in the health communication to provide tailored information to groups in society according to the sources they trust and consider credible. Developing the research beyond the purpose of this study could be to focus on parents in Australia.

**Method discussion**

The choice of method for the data collection was based on the intention to gain a widespread insight into the opinion of Australians on MMR vaccination. In order to achieve a wide geographical spread with Australia and achieving a random selection of participants, the method of a web-based survey was chosen to facilitate this (Bryman, 2012).

The inclusion criteria were applied to facilitate the data collection. One of these criteria was the selection of participants between the ages of 20-60 years of age. Within these age groups the chance was considered higher for the individuals to be parents or planning on becoming parents. These age groups were therefore expected to have an opinion on children's vaccination against MMR compared to younger or older age groups. An improvement to the study could have been to only include parents in the study, however this was not possible to facilitate in the chosen distribution method of a web-survey and the limitations within the SurveyMonkey page. The risk of using a company like Sur-
veyMonkey for data collection in academia is that the author has little control over who will be selected as participants for the survey. This can theoretically, and in the very worst case, lead to an uneven result in regard to the proportion of gender, age, and other factors that could have a negative effect on the data. Taking these risks into account SurveyMonkey ensures that the survey is sent out to a balanced audience when it comes to distribution of gender and age. For the purpose of this study this method of distribution was seen as beneficial since it offers a rather random selection of survey participants, due to the author not having any influence of the selection apart from specifying inclusion criteria. Seeing this from a critical point of view, it could be argued, that the selection of participants is not truly random as they have to be part of the SurveyMonkey system in order to respond to the survey. This was not considered as a limiting issue due to SurveyMonkey having a large database of users.

The benefit with the chosen distribution method, through a system like SurveyMonkey, is that it allows for a more random selection of people within Australia within the database of the SurveyMonkey. The reason a web-survey was conducted with SurveyMonkey was to ensure a random selection of participants with wide geographical spread and variation in the socio-economic factors, rather than distributing the survey to a certain targeted group. The risk of sending the survey to a certain target group or through a certain channel, such as social networks or to choose a certain location to distribute the survey may introduce bias in the selection of the participants, which results in narrower geographical and socioeconomic spread (Bryman, 2012, p. 188). Even though the sample size is small compared to the population, studying it can point to some interesting findings.

A disadvantage tied to web-based surveys is that the accessibility to computers has to be considered. In 2012-2013 the Australian Bureau of Statistics concluded that 83% of the Australian household had access to internet (Australian Bureau of Statistics, 2014). Due to the advancements in technology and spread of smartphones this numbers is only expected to have increased. Bryman points out that another disadvantage can be that there is no way to have any visual cues to help understand the individual on a deeper level (Bryman, 2012, p. 658). In this study the web-survey distribution allowed for a wide geographical spread throughout Australia and also allowed for individuals with different
socioeconomic backgrounds to participate. For the purpose of this specific study this method proved itself to be good for those reasons. Even though the location of the respondent was not significant to the results of the study, a geographical spread was desired to give an indication of the opinions of Australians.

Non-response can be an issue for surveys (Bryman, 2012 p.199), however with the help of Survey Monkey the aim was to collect an exact amount of answers, as the survey responses were considered completed will when 100 finalised surveys were submitted in the system of Survey Monkey. According to Bryman offering incentives to participants is a common and successful form of increasing the response rate of a survey (Bryman, 2012, p. 237). No monetary compensation was offered by the author, however Survey Monkey offers non-monetary incentives, such as donations to a non-profit organisations or the chance to win a prize through sweepstakes. The participants were informed that their participations was on a voluntary basis and that the information they submitted would be treated confidentially, this is also something SurveyMonkey ensures their customers as part of their privacy policy (SurveyMonkey, 2016). The participants were also informed that the purpose of the survey was for academic research and non-commercial use. Initially, 110 surveys were collected however one was excluded due to speeding. The issue of speeding is an inherent problem with web surveys and any self-administrated survey (Tourangeau et. al., 2013). The risk with speeding that the participants speed through the answers in order to complete the survey as quickly as possible without reading the survey questions thoroughly. According to Tourangeau et al. (2013) this is not beneficial for data, however it is an inherent risk in any self-administrated survey both on paper or online (Tourangeau et. al., 2013).

In regard to data collection and data analysis, a few issues had to be considered. According to Körner and Wahlgren (2002) the common purpose for the use of statistical analysis is to present and explain the collected data. To measure any association between the variables a Pearson Chi2-square test was used. A Pearson Chi2-test helps to ensure that there is a statistical significance, rather than there being a random chance of a result occurring (Wahlgren, 2008). The significance of the results showed through the p-value. The p-value has to be below 5% (alpha value : <0,05) in order for the test to have statistical significance. In order to analyse the results it was also useful to understand the
connection among the data variables. The chosen sample size was rather small in comparison for the population, however it can point out some tendencies. The population of Australia is today around 22 million and in 2011 the population between the ages of 20-60 was around 11,735,000. With a confidence level of 80%, this study has a margin of error of 6-7%. In order to achieve a 99% level of confidence with a margin of error of 1% the sample size would need to be around 16,600 respondents. Thurén (1991) argues that for a study to have reliability the research and data collection has to be conducted in the right manner. This way, the study can be conducted by other researchers with the same method with the same results. Körner och Wahlgren (2007) noted that the reliability is affected by the circumstances and environment the study is conducted in. The validity of a study aims to measure to what extent a concept can be applied in the real world (Bryman, 2012, p. 47). Due to the pilot study and supervisor feedback the validity of the study was considered good. The study would have a higher reliability if the survey group was larger. With a larger sample it would also be possible to make a more grounded generalisation of the opinion of the Australian public. Throughout the study it is pointed out that the results apply to the group of respondents and any broader generalisation is only meant to show tendencies.

**Conclusion and future research**

The purpose of this study was to learn more about the factors and sources that influence Australians in their opinions on MMR vaccination for children. Furthermore, the study aimed to explore socio-economic factors that have an influence on the level of trust of the respondents in MMR vaccination. The results of this cross-sectorial study show a mixed result in how the respondents perceive MMR vaccination for children. The cross-sectional design was useful for this study as it aimed to gather information about the target group in a short timeframe. For the data analysis univariate and bivariate analysis were conducted. A Chi2-test was conducted with all questions in combination with the variables such as age, gender, and variables to socioeconomic factors such as annual income and education level to explore if there is any statistical significance. Education level was the most significant socioeconomic factor in the study. Overall, the group trusted medical professional, government and scientific publications while they trusted media sources less. The most prevalent socioeconomic factor, which had an influence.
on the opinions of the respondents, was their education level. Future research could explore the reasonings for the influence of these factors and sources. The research could also be applied on a larger scale to draw more general conclusions on the Australian population. Analysing the results of the study with the help of McGuire’s communication model can in further research be helpful in seeing the importance of understanding the target audience and of a message and which channels they relate to, trust and use. Understanding more about sources and factors that influence the opinions of individuals is important in public health work as it helps to promote information on MMR vaccination in a more targeted and effective way.
References


22


Survey Questions (drafted by author)

1. What is your age?
   - 20 to 29
   - 30 to 39
   - 40 to 49
   - 50 to 59
   - 60 or over

2. Are you male or female?
   - Male
   - Female
   - Other

3. Do you have children?
   - Yes
   - No, but I am planning on becoming a parent in the near future.
   - No, but I am planning on having children sometime in the future.
   - No

4. How confident are you the MMR vaccine (measles, mumps and rubella combination) is beneficial for children?
   - Not at all confident
   - Somewhat confident
   - Quite confident
   - Extremely confident

5. How likely do you think it is for MMR vaccination to cause negative side effects?
   - Not at all likely
   - Somewhat likely
   - Quite likely
   - Extremely likely
6. What are the sources that have influenced your opinion about MMR vaccination? Please rank each one below.

<table>
<thead>
<tr>
<th>Source</th>
<th>No influence</th>
<th>Some influence</th>
<th>High influence</th>
<th>Very high influence</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper/Magazine (print or online)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV/Radio</td>
<td></td>
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</tr>
<tr>
<td>Anti-vaccination sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health journals (print and online)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scientific articles and reports (print and online)</td>
<td></td>
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<td></td>
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<tr>
<td>Australian Government recommendations (e.g. Department of Health)</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Doctor/Public health nurse</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social media</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other parents</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Trusted friends/family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. To what level do you find the sources listed in the previous question to be trustworthy in providing information on MMR vaccination? Please rank each one below.

<table>
<thead>
<tr>
<th>Source</th>
<th>Not trustworthy</th>
<th>Somewhat trustworthy</th>
<th>Quite trustworthy</th>
<th>Extremely trustworthy</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper/Magazine (print or online)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV/Radio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-vaccination sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health journals (print or online)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scientific articles and reports (print or online)</td>
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<tr>
<td>Australian Government recommendations (e.g. Department of Health)</td>
<td></td>
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<tr>
<td>Doctor/public health nurse</td>
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</tr>
<tr>
<td>Social media</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Trusted friends/family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other parents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. How much do the following factors influence your opinion on MMR vaccination?

Please rank each one below.

<table>
<thead>
<tr>
<th>Factor</th>
<th>No influence</th>
<th>Some influence</th>
<th>High influence</th>
<th>Extremely informed</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social network (Family/ trusted friends)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community (e.g. neighbours, work colleagues etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunization requirements (e.g. at school, kindergarten etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government policies (e.g. &quot;No jab, no pay&quot; laws&quot;)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* From 1 January 2016 childcare benefits will be removed from parents who do not immunise their children.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety of vaccine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness of vaccine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other (please specify)

9. What is the highest level of education you have completed?

Answer options:

- No high school diploma
- High school
- Undergraduate
- Postgraduate
Dear Mr or Ms,

My name is Katrin and I am conducting this survey for the research of my master thesis in the area of Public Health at Mid Sweden University in Sweden. The aim of this survey is to examine influencing factors on the opinions towards the MMR (measles, mumps, rubella combination) vaccine for children in Australia.

The survey contains 9 questions and will take approx. 10 min to complete.

Please note the participation in this survey is on a voluntary basis and the responses will be anonymous. The results will not go to any commercial use and will only be used for the purpose of this thesis research.

If you would like more information on the confidentiality and handling of data at SurveyMonkey please read their [privacy policy](https://www.surveymonkey.com/mp/policy/privacy-policy/) and [security statement](https://www.surveymonkey.com/mp/policy/security/).

If you would like more information on the privacy policy and security statement of Survey Monkey, please follow the links below:


If you have any questions please feel free to contact me on kafo1401@student.miun.se.

Thank you for sharing your opinions.

Kind regards,

Katrin Forslund
Student of the Master Programme in Health Science with a major in Public Health
Mid Sweden University
http://www.miun.se/en
Table 3. Frequency table - Question 6 “What are the sources that have influenced your opinion about MMR vaccination? ” (in count and percentage)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>No influence</th>
<th>Some influence</th>
<th>High influence</th>
<th>Very high influence</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper/Magazine (print or online)</td>
<td>59 (54%)</td>
<td>26 (24%)</td>
<td>11 (10%)</td>
<td>6 (6%)</td>
<td>7 (6%)</td>
</tr>
<tr>
<td>TV/Radio</td>
<td>57 (52%)</td>
<td>29 (27%)</td>
<td>12 (11%)</td>
<td>5 (5%)</td>
<td>6 (6%)</td>
</tr>
<tr>
<td>Anti-vaccination sites</td>
<td>75 (69%)</td>
<td>13 (12%)</td>
<td>8 (7%)</td>
<td>7 (6%)</td>
<td>6 (6%)</td>
</tr>
<tr>
<td>Health journals (print and online)</td>
<td>33 (30%)</td>
<td>29 (27%)</td>
<td>22 (20%)</td>
<td>18 (17%)</td>
<td>7 (6%)</td>
</tr>
<tr>
<td>Scientific articles and reports (print and online)</td>
<td>27 (25%)</td>
<td>24 (22%)</td>
<td>27 (25%)</td>
<td>24 (22%)</td>
<td>7 (6%)</td>
</tr>
<tr>
<td>Australian Government recommendations (e.g. Department of Health)</td>
<td>14 (13%)</td>
<td>15 (14%)</td>
<td>39 (36%)</td>
<td>33 (20%)</td>
<td>8 (7%)</td>
</tr>
<tr>
<td>Doctor/Public health nurse</td>
<td>9 (8%)</td>
<td>22 (20%)</td>
<td>30 (28%)</td>
<td>40 (37%)</td>
<td>8 (7%)</td>
</tr>
<tr>
<td>Social media</td>
<td>67 (61%)</td>
<td>19 (17%)</td>
<td>13 (12%)</td>
<td>5 (5%)</td>
<td>5 (5%)</td>
</tr>
<tr>
<td>Other parents</td>
<td>40 (37%)</td>
<td>37 (34%)</td>
<td>18 (17%)</td>
<td>10 (9%)</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>Trusted friends/family</td>
<td>30 (28%)</td>
<td>25 (23%)</td>
<td>28 (26%)</td>
<td>21 (19%)</td>
<td>5 (5%)</td>
</tr>
</tbody>
</table>
Table 5. Frequency table - Question 7: “To what level do you find the sources listed in the previous question to be trustworthy in providing information on MMR vaccination?”

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Not trustworthy</th>
<th>Somewhat trustworthy</th>
<th>Quite trustworthy</th>
<th>Extremely trustworthy</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper/Magazine (print or online)</td>
<td>49 (45%)</td>
<td>39 (36%)</td>
<td>11 (10%)</td>
<td>4 (4%)</td>
<td>6 (6%)</td>
</tr>
<tr>
<td>TV/Radio</td>
<td>45 (41%)</td>
<td>42 (39%)</td>
<td>13 (12%)</td>
<td>2 (2%)</td>
<td>7 (6%)</td>
</tr>
<tr>
<td>Anti-vaccination sites</td>
<td>62 (57%)</td>
<td>22 (20%)</td>
<td>9 (8%)</td>
<td>9 (8%)</td>
<td>7 (6%)</td>
</tr>
<tr>
<td>Health journals (print and online)</td>
<td>(5%)</td>
<td>29 (27%)</td>
<td>41 (38%)</td>
<td>27 (25%)</td>
<td>7 (6%)</td>
</tr>
<tr>
<td>Scientific articles and reports (print and online)</td>
<td>5 (5%)</td>
<td>22 (20%)</td>
<td>32 (29%)</td>
<td>41 (38%)</td>
<td>9 (8%)</td>
</tr>
<tr>
<td>Australian Government recommendations (e.g. Department of Health)</td>
<td>8 (7%)</td>
<td>20 (18%)</td>
<td>41 (38%)</td>
<td>35 (32%)</td>
<td>5 (5%)</td>
</tr>
<tr>
<td>Doctor/Public health nurse</td>
<td>5 (5%)</td>
<td>10 (9%)</td>
<td>40 (37%)</td>
<td>49 (45%)</td>
<td>5 (5%)</td>
</tr>
<tr>
<td>Social media</td>
<td>71 (65%)</td>
<td>20 (18%)</td>
<td>8 (7%)</td>
<td>4 (4%)</td>
<td>6 (6%)</td>
</tr>
<tr>
<td>Other parents</td>
<td>16 (15%)</td>
<td>41 (38%)</td>
<td>30 (28%)</td>
<td>19 (17%)</td>
<td>3 (3%)</td>
</tr>
<tr>
<td>Trusted friends/family</td>
<td>28 (26%)</td>
<td>49 (45%)</td>
<td>17 (16%)</td>
<td>9 (8%)</td>
<td>6 (6%)</td>
</tr>
</tbody>
</table>