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Systematic Literature Review

Parents' Perspectives on Vaccination Rubella Measles in Children

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A B S T R A C T

Background: The global measles cases increased by 79% in the first two months of 2022 compared to the same period in 2021, leading to an outbreak, including in Indonesia. In 2022, Indonesia reported a total of 4845 confirmed laboratory cases of measles and six deaths in 32 out of 38 provinces. Challenges related to parental trust and doubts about vaccines have raised the risk of outbreaks due to unvaccinated children.

Purpose: To synthesize and critically assess parental perspectives and attitudes towards the use of Measles Rubella/MR vaccination in children

Methods: The research method employed was a systematic literature review, conducted by using primary studies from PubMed, Proquest, and ScienceDirect with the keywords "Parent; MR Vaccine; Parental perspective or parent's decision; child" published between 2018-2023, in English, open access, and relevant to the topic

Results:A total of 17,759 research articles were screened for eligibility, and 9 articles met the inclusion criteria. Based on the 9 reviewed articles, parental perspective of Measles Rubella/MR vaccination was influenced by six factors: vaccine, social, knowledge, disease, trust, and practicality.

Conclusion: It is crucial to develop strategies that target vaccine trust and address sources of vaccine hesitancy. Maintaining a trusting partnership between parents, healthcare providers, and the government is essential in dispelling doubts about the benefits and safety of vaccines.

INTRODUCTION

Measles is the most contagious disease that has been described since the early 9th century by a Persian doctor, named Rhazes [1]. Measles and rubella are transmitted through saliva droplets and spread through the air, especially when coughing, sneezing or from nasal secretions. Complications that often occur include diarrhea, bronchopneumonia. In rubella disease, it is necessary to be aware of complications in the first trimester of pregnancy because it can result in the fetus experiencing abortion, premature birth, stillbirth or live birth with congenital defects such as deafness, blindness or congenital heart disease (Congenital Rubella Syndrome/CRS) [2]. Measles attacks susceptible individuals of all ages and is one of the leading causes of death in children worldwide [3]. In 2019 there were more than 207,000 deaths from measles globally, which is the highest number

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reported in the last 23 years.[1]Immunization or vaccination is the most effective public health measure to prevent disease and can save more than 4.4 million lives every year worldwide. Both measles and rubella can be prevented by using the Measles Rubella/MR vaccine [4].

In 2021, as many as 25 million children did not receive vaccinations, this number increased by 2 million more than in 2020 and 6 million more than in 2019 [5]. World measles cases increase by 79% in the first two months of 2022 when compared with the same period in 2021 which caused the outbreak. In 2020, as many as 23 million children did not receive basic childhood vaccines through routine health services, this is the highest number since 2009 and 3.7 million more than in 2019. The countries experiencing the largest measles outbreaks in 2022 are: Somalia, Yemen, Afghanistan, Nigeria, Ethiopia [6]. This situation also occurs in Indonesia, where in 2022 a total of 4,845 laboratory-confirmed measles cases and six deaths (CFR 0.1%) were reported in 32 of the 38 provinces in Indonesia. The provinces most affected were Aceh (978 cases), West Sumatra (859 cases), Riau (500 cases), and East Java (459 cases). National immunization coverage in 2021 is 87% for the first dose of measles vaccine/Measles antigen-containing vaccines 1 (MCV1) and 59% for Measles antigen-containing vaccines 2 (MCV2) which is still far from the target of 95% needed to prevent the spread of measles [7].

Challenges related to parental confidence and hesitancy towards vaccines lead to increased risk of outbreaks due to unvaccinated children [8]. Vaccine hesitancy means delays in accepting and rejecting vaccines even though vaccination services are available, this is a complex and specific problem [8]. Amidst the rampant emergence of the digital information era, this research highlights the novelty in how parents acquire, interpret, and respond to information regarding MR vaccination, expanding the understanding of the evolving dynamics of parents' perceptions towards the safety and benefits of vaccination for their children.For this reason, it is necessary to know the views of parents regarding giving Measles Rubella/MR vaccination to children so that they can see the strengthening and inhibiting factors encountered in giving vaccination to children, so that they can formulate appropriate treatment.

METHOD

This research uses a literature review method. This systematic review was written based on the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines for reporting events evaluated based on health care interventions and behaviors. Questions regarding population, intervention, control and outcomes (PICO) used in the systematic review are: P (population): parent, I (intervention): Measles Rubella vaccine, C (comparison/control): -, O (Outcome): parent perspective or parent's decision. The articles used were taken from the online databases PubMed, Proguest (entered via remote access at the University of Indonesia library), ScienceDirect, using the same keywords, namely parent, MR vaccine, parents perspective or parent's decision, child. Then identify relevant articles using inclusion and exclusion criteria, according to table 1 below:

Table.1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
1. Articles published between 2018-2023	1. Report articles, dissertations, opinions, literature reviews
2. Article published in English	2. Articles that cannot be accessed with full text
3. Accessible articles/Open access/full text	3. Title duplication
4. Articlestudy	4. Articles discussing vaccines other than the Measles Rubella/MR vaccine
5. Articles according to the topic	

RESULT DAN DISCUSSION

After conducting a literature search from the PubMed, Proquest, ScienceDirect databases and filtering again according to predetermined inclusion criteria, 9 articles were found that were suitable for further review. The stages of search results and article selection are displayed using the PRISMA diagram as follows:

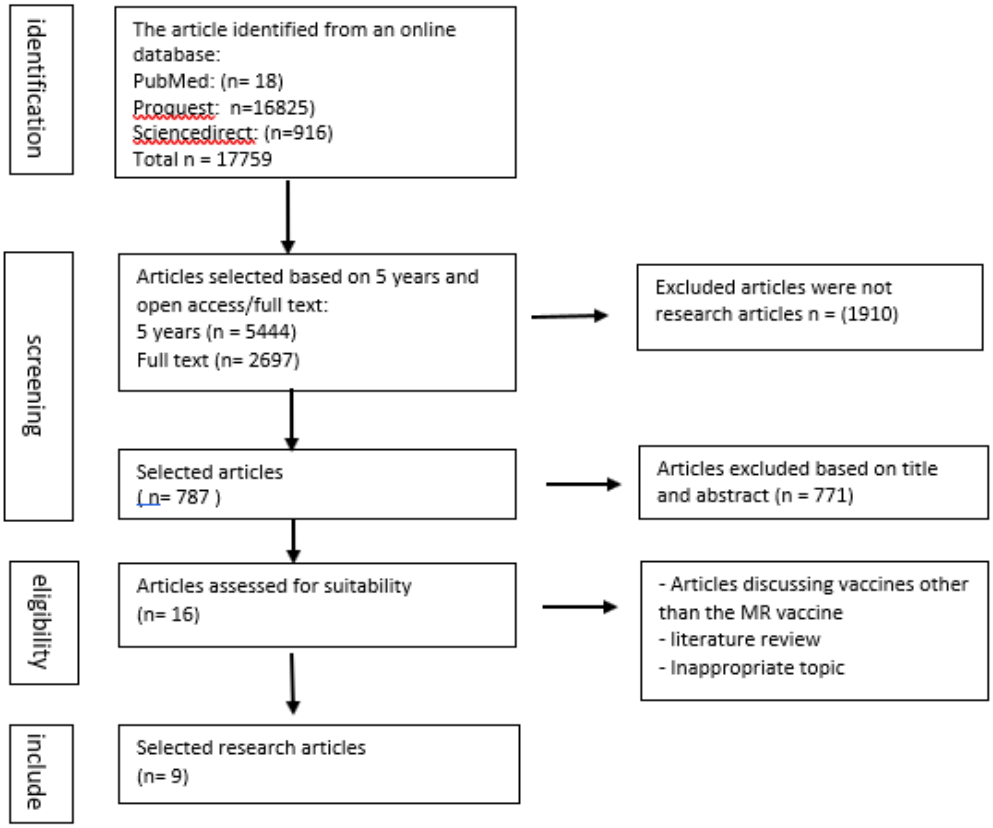

Figure 1. PRISMA diagram of the article search process

Of the 9 selected articles, 2 studies were conducted in Africa (Sudan and Somalia), 1 study in Asia (Malaysia), 1 study in Europe (Denmark), and 2 studies in America (America, Minnesota), 2 studies in Australia (Australia).) and 1 in Oceania (New Zealand). Each article uses research methods, namely: 4 qualitatively, 3 quantitatively and 2 using mixed methods. The term parent includes parents, guardians, carers, while perspective includes a positive perspective/acceptance and a negative perspective/rejection of the Measles Rubella/MR vaccine in children.

Table 2. Summary of Selected Article Results

No.	Researchers and Locations	Objective	Method	Sample/informant	Results
1	Hazeqa Salleh, et al 2023, Sabah Malaysia[11]	Assessing the beliefs and perceptions of marginalized communities towards volunteers to increase measles immunization coverage	qualitative	40 parents who have children under 5 years	**Positive perspective** The respondent has less awareness of measles and considering that the impact of the disease is not serious, and obstacles/obstacles to vaccination, namely nomadic lifestyle, financial problems, citizenship status, language, weather, not remembering immunization schedules, fear of health workers, having many children and lack of women's autonomy in making decisions **Negative perspective**

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No.	Researchers and Locations	Objective	Method	Sample/informant	Results
					most respondents believed that the measles vaccine was necessary for children's health.
2	Nadia A. Charania et al, 2023 New Zealand[12]	To explore factors associated with access and use of immunization and develop strategies to increase age-appropriate vaccination among refugee children in New Zealand	mix-method	overseas-born children who arrived in New Zealand on a refugee visa before their 18th birthday from 1 January 2006 to 31 December 2018. These children were identified by selecting all individuals with birth dates between January 1, 1989, and 31 December 2018, whose first travel record was arrival to New Zealand on a refugee (quota, convention, or family reunification), humanitarian, or overstay visa.	The majority of overseas-born refugee children living in New Zealand are not registered on the National Immunization Register (NIR) and have no record of their vaccination status. Less than a third of these children were appropriately vaccinated for age with the measles, mumps, and rubella (MMR) vaccine. Factors associated with low enrollment in NIR and low MMR vaccination coverage included visa category, age group on arrival, and year of arrival in New Zealand.
3	Ann-Britt Kiholm Kirkedal,et al 2022 Denmark[13]	To understand the opinions, attitudes of parents and health workers towards the MMR vaccine in general and to increase the distribution of the MMR vaccine	qualitative	26 parents, 19 women and 7 men have children 5-6 months old	Four attitudes towards vaccination: Confidence in vaccination, acceptance of vaccination after careful consideration, hesitancy towards vaccines, defensive refusal, assessed based on trust in the health care system, sources of information, challenges, parents' attitudes about administration progress, professional response health on parental attitudes. Apart from that, it can also be seen from the low tolerance between supporters and those refusing vaccines, the negative effects felt after vaccination.
4	Majdi M. Sabahelzain et al, 2022 Sudan[14]	Evaluating whether measles vaccine uptake is predicted by measles vaccine hesitancy	Quantitative, cross sectional	500 parents who have children 2-3 years old	The use of measles vaccine is closely related to the mother's occupation and number of children. Independent working mothers are more likely to immunize their children than working mothers and household mothers. Families with 3 children are less likely to immunize their children than those with 1 child
5	EinarB. Thorsteinsson , et al, 2020 Australia[15]	Investigating decision making regarding the MMR vaccine	mix-method	132 parents and prospective parents	78.8% of participants showed a positive attitude towards MMR immunization, 15.9% showed a negative attitude. There is a strong correlation between attitudes towards MMR and MMR vaccine status. There is a weak correlation between attitudes towards ASD (Autism Spectrum Disorder) and attitudes towards MMR, and scientific literacy also has a low correlation with attitudes towards the MMR vaccine. Participants who were positive for the MMR vaccine were more likely to seek information from general practitioners compared to participants who were negative for the MR vaccine who tended to seek information from friends and websites.
6	Ben Christianson et al, 2020 Minnesota, USA[16]	Assess attitudes and beliefs regarding the MMR vaccine, motivation to vaccinate, and intentions to	Quantitative, cross sectional	300 families	There has been a decline in MMR vaccination uptake among Somali children in Minnesota, with only 43% of 2-year-old children of Somali descent receiving the vaccine in 2020. Factors

No.	Researchers and Locations	Objective	Method	Sample/informant	Results
		vaccinate children in the future on time			influencing parental decision-making regarding MMR vaccination include previous concerns about the relationship between the vaccines. and autism, perceived side effects after vaccination, and the number of social and formal messages recommending the vaccine. Efforts by health care providers, public health professionals, school staff, religious leaders, and community members are considered important in educating parents about the dangers of measles, the safety of the MMR vaccine, and the importance of timely vaccination.
7	Taylor A. Holroyd,2020 USA[17]	to explore decision-making processes regarding vaccines among parents of children with and without autism, specifically with a focus on Medicaid recipients.	qualitative	This research sample consisted of 24 parent participants. The majority of participants were female (92%), African American (58%), and aged 40–49 years (46%). Fourteen of the participating parents had children with autism spectrum disorder (ASD), while the remainder had children without ASD. Participants were recruited from two children's health clinics in Baltimore City that primarily serve Medicaid patients.	The results of this study indicate that there are differences in the vaccine decision-making process between parents of children diagnosed with autism and parents of children who do not have autism. Three main themes emerged from interviews with 24 parents of children using Medicaid, namely concerns about vaccines, the relationship between the child's health care provider and the parents, and perceptions of risk. Parents of children with autism were more likely to consider the idea that vaccines are linked to autism in their decision-making process and were less likely to be influenced by personal recommendations from the child's health care provider. This research emphasizes the importance of addressing parental concerns and misunderstandings about vaccines, especially among parents of children with autism. This research also discusses the relationship between parents and child health care providers in relation to vaccine decision making.
8	Mathew Toll et al, 2020 Australia[18]	To examine the consistency of factors related to attitudes towards vaccination and MMR vaccination status	Longitudinal study, analysis of data from the Longitudinal Study of Australian Children (LSAC)	4779 children born in 2003-2004 and who had information about the child's primary caregiver from LSAC data matched to the Medicare data set	Children who have many siblings are less likely to be immunized, children with medical conditions and use of prescribed medications are more likely to receive complete immunization, Children whose parents are older, have a college/higher degree and are not religious show high resistance to vaccines, children whose parents do not work, receive payments from the government are less likely to receive vaccinations.
9	Asha Jama, et al, 2018 Somalia, Stockholm[19]	To find out the factors that influence parents' decisions to give MMR vaccine to their children in Somalis living in the Rinkeby and Tensta districts in Stockholm, Sweden	qualitative	13 Mothers who have children 18 months - 5 years	7 of the mothers have not vaccinated their children, the other 6 have vaccinated their children. Barriers to getting vaccinated on time, fear that the child will find it difficult to speak if vaccinated and unpleasant encounters with nurses

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Table 3. Themes that emerged regarding MMR vaccine hesitancy/refusal

Theme	Sub Theme	Article
Knowledge Factor	Search for information from friends and websites	**5.7**
Vaccine Factors	Fear that children will have difficulty speaking if they are vaccinated	**9**
	Concerns about the link between vaccines and autism	**6,7**
	Side effects felt after vaccination	**6.3**
	Concerns about ingredients and uncertainty about vaccine safety	**5**
	Experience with a particular vaccine	**7**
Disease Factors	Lack of awareness of measles	**1**
	It is assumed that the impact of the disease is not serious	**1,7,3**
	It is better to suffer from measles, mumps, rubella as a child so that they develop well when they grow up	**3**
Trust factor	Fear of health workers	**1**
	Unpleasant encounter with the nurse	**9**
	Limited trust in the health care system (the existence of interests such as selling vaccines)	**3**
Social Factors	nomadic lifestyle,	**1**
	Financial Problem,	**1**
	citizenship status,	**1**
	Language,	**1**
	Weather,	**1**
	Have many children	**1,4,8**
	Women's lack of autonomy in making decisions	**1**
	Not listed on the National Immunization Register (NIR)	**2**
	Mom doesn't work	**4**
	Religion (no religion)	**5.8**
	Parental education	**8**
	Parental age	**8**
Practical factors	Not remembering the immunization schedule	**1**
	Have no vaccination record	**2**
	The child is not old enough/too small	**5.3**

Table 4. Themes that emerged regarding acceptance of the MMR vaccine

Theme	Sub Theme	Article
Knowledge Factor	Seek information from a general practitioner	**5**
	Seek information from immunization service providers	**7**
Vaccine Factors	Believes that the measles vaccine is necessary for children's health	**1.7**
	The positive opinion is that the MMR vaccine has no connection with autism	**5**
	The side effects of vaccines are relatively smaller compared to being exposed to the disease	**3**
Disease Factors	Parental fear of measles	**6**
Trust factor	Trust the information provided by immunization service providers	**7**
	Complete trust in the health service system regarding vaccines working well	**3**
Social Factors	The employment status of mothers who work independently is more likely to immunize their children	**4**
	Small number of children/1 person	**4**
	Families who receive government compensation	**8**
	Unemployed parents	**8**
	Have a medical condition	**8**
Practical factors	Not knowing what to do causes children to be vaccinated	**3**

For data extraction using an inductive grounded theory approach, where researchers progressively identify themes from the data to create an explanatory framework [20]. This approach is appropriate because it allows the systematic extraction of new findings without sacrificing the richness of the data with pre-existing themes. Differentiating between parental acceptance and rejection of the Measles Rubella/MR vaccine.

Parents' Perspectives on the Measles Rubella/MR Vaccine in Children

The six main themes identified were knowledge factors, vaccine factors, disease factors, belief factors, social factors and practical factors [10].

1. Knowledge Factor

Various sources of information influence parents' views in deciding whether to accept or refuse to give the Measles Rubella/MR vaccine to their children. Sources of information can come from health workers (doctors, specialists, nurses), media coverage, the internet, and lay information. If a pediatrician suggests that a child needs to be given the Measles Rubella/MR vaccine and explains what the vaccine is, what it works against, what to do, what the side effects are, then parents are more likely to agree to their child's vaccination rather than being given a leaflet about the vaccination, but they don't with most parents of autistic children in Maryland, they understand the benefits of vaccines but are afraid of the side effects [17]. Parents in Minnesota who received information from at least 3 formal messengers (physician, school, health worker) recommending Measles Mumps Rubella/MMR vaccination were more likely to intend to get the MMR vaccine on time than parents who received recommendations from informal sources (family, friends etc)[16].

Parents in Australia who refuse tend to get information from internet sources (mother's blogs, etc.), lay information (friends, family) who tend to seek access from people who have similar views to them regarding child vaccination [15]. Not all parents access information from credible and trusted sources [17]. And there are still parents in Australia who do not immunize their children because of a lack of information [15].

Most mothers in Sabah Malaysia believe that children who are exposed to measles will experience skin rashes, and their children can contract measles from children who live in high-risk areas and they admit that children are susceptible to measles and must get vaccinations, because*Measles antigen-containing vaccines*/MCV provides immunity and protection to children [11].

2. Vaccine Factors

a. Information that vaccines cause autism

Of the 300 Somali community families in Minnesota, USA, 212 families (71%) were concerned about the connection between the Measles Mumps Rubella/MMR vaccine and ASD (Autism Spectrum Disorder). Apart from that, 10% of parents are worried about their child's speech development after being vaccinated [16]. This is in line with research conducted in Somalli Stockholm [19]. Meanwhile, some parents in Maryland who have autistic children and received the Measles Mumps Rubella/MMR vaccine for their children said they understand that autism and vaccines have nothing to do with it, that's a myth, it's possible that autism can happen to anyone. There are children who have had all their vaccines and are fine [17]. in line with research at Somalli Stockhom [19].

b. Concern about symptoms after injection

Most parents of neurotropic children and autistic children report concerns regarding vaccines, even though they understand the benefits of vaccines in children [17]. 22% of parents in Minnesota expressed concern about symptoms after the injection, fever was the most common adverse event experienced by parents after their child was vaccinated [16], Concerns about vaccine side effects, especially regarding influenza vaccines, were also mentioned [17]. Apart from that, they also felt that too many vaccines were given in one visit or that the distance between one vaccine and another was too close [11]. It's different with parents in Denmark, they think thatThe side effects of the vaccine are relatively smaller compared to being exposed to measles, mumps, rubella [13]. Most respondents in Sabah Malaysia think that measles vaccination is necessary for their children's health [11].

3. Disease Factors

Risk perception also plays a role, with some parents being more willing to vaccinate against diseases they consider more serious or relevant to their child's health [17]. In Sabah, Malaysia, some respondents view measles as a trivial health problem because children only experience skin rashes and fever which can be treated with medication

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[11]. A study in the United Kingdom (UK) found that the general public was not aware that measles could be fatal and cause serious complications [21].

4. **Trust Factor**

This research also discusses the relationship between parents and child health care providers in relation to vaccine decision making. Some parents trust their health care provider's recommendations and feel that if the provider gave their own child a vaccine, it must be good for their child, too [17]. In line with research in Somalli, what motivates respondents to vaccinate their children is trust in nurses, and trust in God that whatever happens to their children is in accordance with God's will [19]. Other parents consider their own opinions and may not follow all of the service provider's recommendations [17] some respondents said they were afraid to ask about immunization because they were often scolded even if they asked politely [11]. In line with research in Somalli who had unpleasant experiences with nurses [19].

5. **Social Factors**

Social factors are complex factors that influence parents' decisions to immunize their children or not. These social factors include: nomadic lifestyle, financial problems, citizenship status, language, weather, having many children, lack of women's autonomy in making decisions, not being registered on the National Immunization Register (NIR), parents' employment, religion (no religion), parental education, parental age.

Their nomadic lifestyle makes it difficult for them to keep follow-up appointments, and the decision to vaccinate children is made by the father, who is the sole breadwinner. If father doesn't agree then mother will obey [11]. Children who have more siblings are less likely to be immunized [18]. This research is in line with research conducted in Khartoum State, Sudan, which states that families with 3 children are less likely to immunize their children than those with 1 child [14]. Additionally, children whose parents are older, have a bachelor's degree or higher and are not religious are less likely to vaccinate their children than children whose parents are unemployed, receive government benefits and have medical conditions [18]. Independent working mothers are more likely to immunize their children than working mothers and household mothers [14].

Another problem is the problem with refugee children born abroad who live in New Zealand which affects the Measles Mumps Rubella/MMR vaccination coverage in children. The results showed that the majority of overseas-born refugee children living in New Zealand were not registered on the National Immunization Register (NIR) and had no record of their vaccination status. The study also found that less than a third of the children were appropriately vaccinated for age with the measles, mumps, and rubella (MMR) vaccine. Factors associated with low enrollment in NIR and low MMR vaccination coverage included visa category, age group on arrival, and year of arrival in New Zealand. This research emphasizes the need to increase engagement with refugee families and increase enrollment in NIRs to ensure adequate immunization coverage for these children [12].

6. **Practical Factors**

Practical factors that influence the implementation of vaccination include distance to the service location, not remembering the immunization schedule, not having vaccination records, the child is not old enough/too small.

Parents and caregivers from marginalized groups in Sabah, Malaysia, face various obstacles in implementing vaccination such as long distances to walk to clinics, language and bad weather [11], Several respondents also admitted that they forgot the immunization schedule, their nomadic lifestyle made it difficult for them to fulfill follow-up appointments, the decision to vaccinate their children was made by the father, who was the sole breadwinner. If Dad doesn't agree then Mom will obey [11].

CONCLUSION

This review found that the biggest obstacles to vaccination are vaccine factors including vaccine safety, vaccine side effects and various social factors. These factors influence parents' views in deciding whether to accept or refuse to give the Measles Rubella/MR vaccine to their children. It will be important to develop strategies that target vaccine confidence and information sources that encourage vaccine hesitancy. Overcoming vaccine hesitancy is a shared responsibility. A universal approach will most likely not be successful, because each region/region has different problems. Maintaining trusting partnerships among parents, physicians, and the government sector is critical to dispelling doubts about the benefits and safety of vaccines.

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