Paternal attitude & Beliefs in children vaccination

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Abstract

Introduction: *Vaccination* is a simple, safe, and effective way of protecting you against harmful diseases, before you come into contact with them. Immunization leads to a remarkable reduction in cases of vaccine-preventable infectious diseases between children. **Aim of the study:** Our aim was to examine how parental attitudes and beliefs toward childhood vaccination were measured in questionnaires through a systematic review of the literature. **Design:** descriptive study, **setting**: study was carried out from Najaf and Babil from 1st January 2024 to 20 February 2024. Under the supervision of the department of anesthesia technologies in Al-Mustaqbal university. **Subjects:** Two thousand (2000) adult parents between (20– 50) years old were enrolled in this study, one thousand and one hundred ten (1110) males and eight hundred fifty (890) females. **Discussion:** From the results above, a decision is made to reject the null hypothesis and accept the alternative hypothesis Which proves that there is a high significant when examine how parental attitudes and beliefs towards childhood vaccination in a significant level of 0.05 and below with statistical significance (0.001 High-significance data variable) this is due to the data with the higher average, **Conclusion:** from this data we can conclude there was a high significance data analyzed in paternal attitude and beliefs in children vaccination and there are essential in life to get vaccination from the modern disease. People who do not believe in the vaccine may be because they are uneducated, uneducated, and unemployed. **Recommendation:** Based on the study, the following recommendations are suggested: Health education program about the importance of vaccination, Ongoing research about how to decrease vaccine hesitant.

Keywords: Paternal, Attitude, Beliefs, children Hesitancy, Refusal, Immunization, Vaccination, Vaccines.

Introduction

Vaccination is the administration of a vaccine to help the immune system develop immunity from a disease. Vaccines contain a microorganism or virus in a weakened, live or killed state, or proteins or toxins from the organism. In stimulating the body's adaptive immunity, they help prevent sickness from an infectious disease. When a sufficiently large percentage of a population has been vaccinated, herd immunity results. Herd immunity protects those who may be immunocompromised and cannot get a vaccine because even a weakened version would harm them **(Meyer & Zepp, 2022).**

Vaccination is the most effective method of preventing infectious diseases; widespread immunity due to vaccination is largely responsible for the worldwide eradication of smallpox and the elimination of diseases such as polio and tetanus from much of the world. However, some diseases, such as measles outbreaks in America, have seen rising cases due to relatively low vaccination rates in the 2010s – attributed, in part, to vaccine hesitancy. According to the World Health Organization, vaccination prevents 3.5–5 million deaths per year **(Excler et al., 2021).**

The first disease people tried to prevent by inoculation was most likely smallpox, with the first recorded use of variolation occurring in the 16th century in China. It was also the first disease for which a vaccine was produced. The smallpox vaccine was invented in 1796 by English physician Edward Jenner. He was the first to publish evidence that it was effective and to provide advice on its production Louis Pasteur furthered the concept through his work in microbiology. The Smallpox was a contagious and deadly disease, causing the

deaths of 20–60% of infected adults and over 80% of infected children (2). When smallpox was finally eradicated in 1979, it had already killed an estimated 300–500 million people in the 20th century **(Shukatka & Kryvoruchko, 2023).**

Vaccination efforts have been met with some reluctance on scientific, ethical, political, medical safety, and religious grounds, although no major religions oppose vaccination, and some consider it an obligation due to the potential to save lives. Early success brought widespread acceptance, and mass vaccination campaigns have greatly reduced the incidence of many diseases in numerous geographic regions. The Centers for Disease Control and Prevention lists vaccination as one of the ten great public health achievements of the 20th century in the U.S Various disputes have arisen over the morality, ethics, effectiveness, and safety of vaccination. Some vaccination critics say that vaccines are ineffective against disease or that vaccine safety studies are inadequate. Some religious groups do not allow vaccination, and some political groups oppose mandatory vaccination on the grounds of individual liberty in response, concern has been raised that spreading unfounded information about the medical risks of vaccines increases rates of life-threatening infections, not only in the children whose parents refused vaccinations **(Nuwarda et al., 2022).**

Those who cannot be vaccinated due to age or immunodeficiency, who could contract infections from unvaccinated carriers. In the United States people who refuse vaccines for non-medical reasons have made up a large percentage of the cases of measles, and subsequent cases of permanent hearing loss and death caused by the disease. Many parents do not vaccinate their children because they feel that diseases are no longer present due to vaccination. This is a false assumption, since diseases held in check by immunization programs can and do still return if immunization is dropped. These pathogens could possibly infect vaccinated people, due to the pathogen's ability to mutate when it is able to live in unvaccinated hosts **(Aberumand et al., 2022).**

The implementation of vaccination schedules worldwide has led to a considerable decrease in childhood morbidity and mortality during the last decades. It is currently estimated by the World Health Organization (WHO) that vaccination pre-vents 2–3 million deaths annually and a further 1.5 million could be avoided if vaccine uptake increased at a global scale. Nonetheless, vaccine hesitancy remains one of the 10 major global threats as per the WHO report in 2019. Vaccine hesitancy is defined as the "delay in acceptance or refusal of vaccination despite availability of vaccination services" **(Nayir et al., 2020).**

The responsibility the vaccinate children's lies with their parents. Therefore, parents' attitudes, knowledge and perceptions towards vaccination are of great importance as they drive their actions for timely and complete immunisation. However, previous studies indicate a lack of knowledge and awareness among Saudi parents which contributed to their negative attitude towards childhood immunisations. Similarly, another study conducted to assess parents' immunisation knowledge found that 20–40% of the respondents had insufficient knowledge on the topic **(Alabadi & Aldawood, 2020).**

In many countries, health experts state that there is a trend of mistrust when it comes to vaccines, and thus a refusal to use them. The World Health Organization (WHO) has included this trend in one of the 10 threats to world health in 2019. At the same time, it should have in mind that a number of studies highlight the negative aspects of vaccination, which are very often the result of media influence. A health scare, or panic created by the media in relation to health issues, has been shown to increase people's need for information and for people to begin to question traditional sources of information as trustworthy. Furthermore, research shows that vaccination rates vary depending on the use of the mass media, especially online media, which is the dominant form of communication in most countries. In line with the above, some studies have shown that more and more parents are searching for vaccination information on various online sources **(Melovic et al., 2020).**

Aim of the study

The aim of the study is to assess Paternal attitude & Beliefs in children vaccination

Patients and Methods

Research design:

A descriptive research design was used to conduct the present study.

Research setting:

This study was carried out from Najaf and Babil from 1st January 2024 to 20 February 2024.

Subjects:

Two thousand (2000) adult parents between (20– 50) years old were enrolled in this study, one thousand and one hundred ten (1110) males and eight hundred fifty (890) females.

Ethical consideration:

An official approval was obtained from college of medical and health techniques, Al-Mustaqbal university. The aim of the study was explained to each parent to gain their confidence and trust. An oral consent was obtained from each parent to participate in the study, after ensuring that data collected were treated confidentially and he has the chance for withdrawal at any time.

Method:

This study was carried out from Najaf and Babil from 1st January 2024 to 20 February 2024. Under the supervision of the department of anesthesia technologies in Al-Mustaqbal university.

Tools of data collection:

Data was collected through using a structured interviewing questionnaire

First part: The patients were checked according to the study questionnaire about age, gender, Living, Academic achievement, Occupation.

Second part: Do you trust the vaccine?, Is the vaccine safe for the child?, Do vaccines prevent diseases?, Is it important to be given the vaccine?, Is natural immunity better than the vaccine?, Does hygiene replace taking vaccines to combat diseases?, Is allergy a contraindication for taking the vaccine?, Are there side effects from taking the vaccine?, Does the vaccine lead to death?, does the vaccine cause pain?, Does the vaccine cause paralysis?, Do vaccines cause swelling in the injection area?, Is distance from the center a reason not to give the vaccine?, Does delaying the vaccine beyond its due date cause harm?, does financial hardship prevent you from vaccinating your child?.

Statistical Analysis

Demographic data, including (age, gender, living, Academic achievement, occupation). collected information were recorded using a checklist. Data were analyzed using IBM SPSS statistic version 28.0. Results of descriptive statistics were illustrated through frequency distribution tables and charts.

Results

The data was analyzed using the statistical program IBM SPSS Statistic 28 the results attached below were obtained based on the following hypotheses and aim of this study (Our aim was to examine how parental attitudes and beliefs towards childhood vaccination were measured in questionnaires through a systematic review of the literature).

1- The null hypothesis

There is no significant examine how parental attitudes and beliefs towards childhood vaccination in a significant level of 0.05 and above.

$M_2 \neq: M_1\ H_0$

2- The alternative hypothesis:

There is a significant examine how parental attitudes and beliefs towards childhood vaccination in a significant level of 0.05 and below.

$M_2 =: M_1 \quad H_1$

Table (1): descriptive statistics for data study.

Statistics						
N= 2000 case		**Age**	**gender**	**living**	**Academic achievement**	**occupation**
N	Valid	2000	2000	2000	2000	2000
	Missing	0	0	0	0	0
Mean		26.30	1.56	1.26	1.26	1.45
Std. Deviation		5.472	0.497	0.441	0.441	0.498
Minimum		20	890 female	528 countryside	640 no educated	1220 employee
Maximum		50	1110 male	1472 city center	1360 educated	780 unemployed

Table (1) shows the descriptive statistic mean, std. deviation, minimum and maximum for data research age, gender, living, academic achievement and occupation. Under one thousand case enrolled in this study which gender was 890 females and 1110 males.

Table (2): number of genders

Gender			
Parameters		Frequency	Percent
Valid	Female	890	44.5 %
	Male	1110	55.5 %
	Total	2000	100 %

Table (2) shows that the frequency of male parents was 55.5% while female parents were 44.5%.

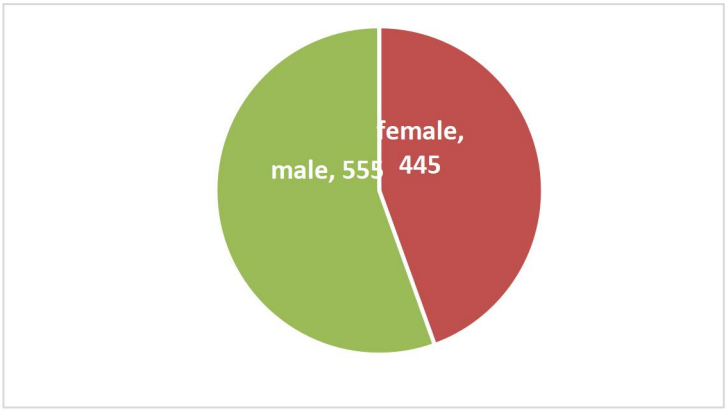

Figure (1): distribution of male and female in this study

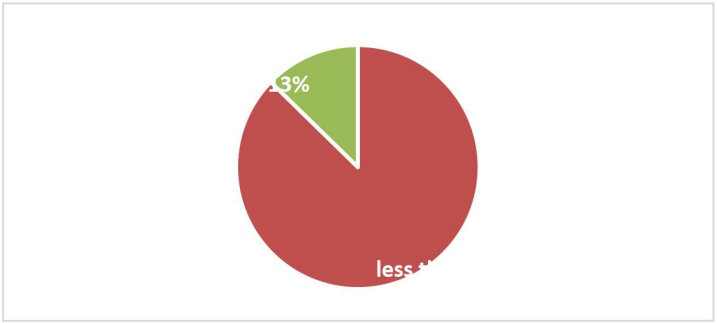

Figure (2): percent for age.

Figure (2) shows that 87.3% less than 30 years old while 12.7% were above 30 years old.

Table (3): number of cases living.

Living			
Parameters		Frequency	Percent
Valid	City center	1472	73.6 %
	Countryside	528	26.4 %
	Total	2000	100 %

Table (3) shows that 73.6% were living in city while 26.4% were living in country side.

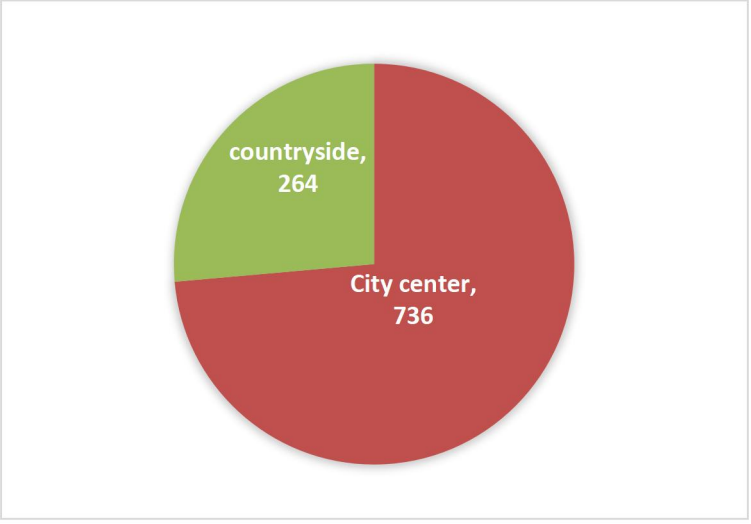

Figure (3) The distribution of parents living site in the study.

Figure (3) Shows that distribution of parents in country side was 26.4% while 73.6% living in city center.

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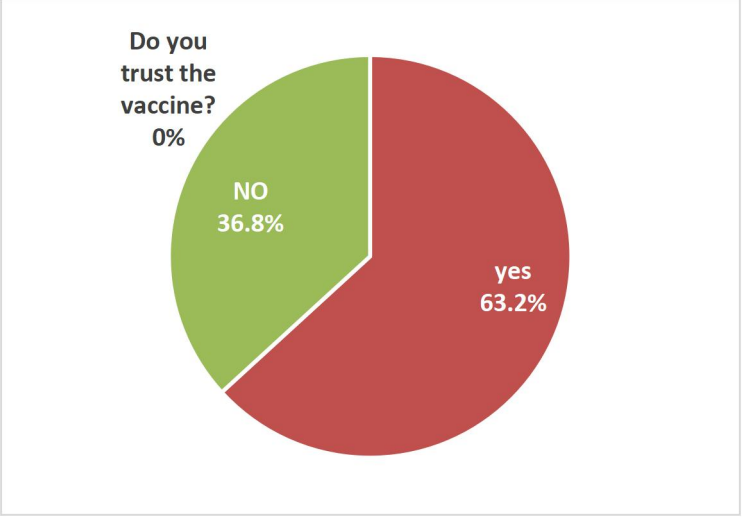

Figure (4) number to parents that trusted in vaccine

Figure (4) Shows that number of parents that trusted in vaccine were 63.2%.

Table (4): distribution of parents' academic education level.

Academic education			
Parameters		Frequency	Percent
Valid	Educated	1360	68 %
	Non educated	640	32 %
	Total	2000	100 %

Table (4) shows that 68% of parents were educated and 32% weren't educated

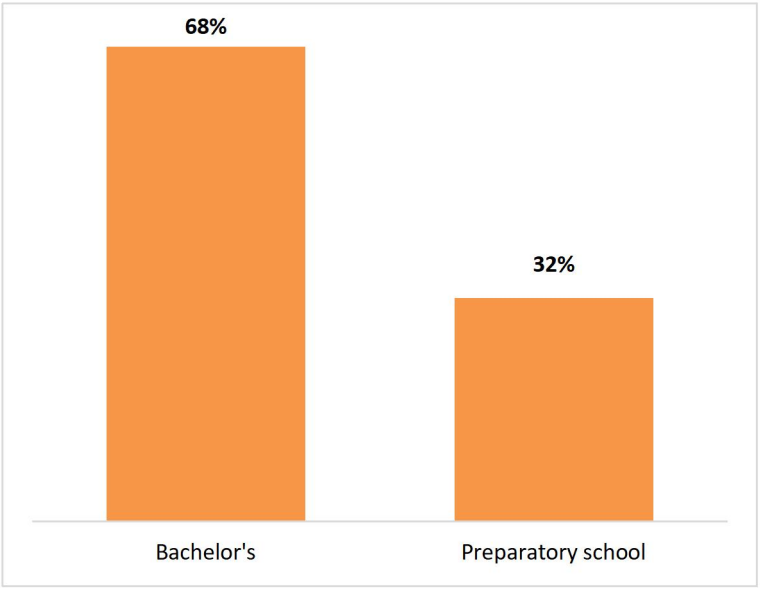

Figure (5): Distribution of parents' academic education level

Figure (5) shows that about 68% of parents were educated and 32% were preparatory education

Table (5): Parents' occupation in this study

Occupation			
Parameters		Frequency	Percent
Valid	Employee	1220	61 %
	Unemployed	780	39 %
	Total	2000	100 %

Table (5) shows that 61% of parents were employee while 39% weren't employed.

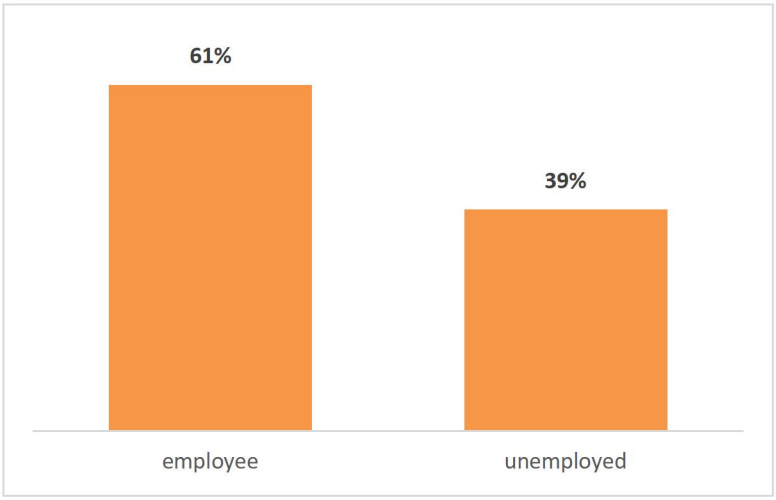

Figure (6): parents' occupation

Table (6): Relation between gender and cases that trusted to vaccine.

gender * Do you trust the vaccine?						
		Do you trust the vaccine?				
		No(N)	%	Yes (N)	%	Total
Gender	Female	342	17.1	548	27.4	890
	Male	394	19.7	716	35.8	1110
Total		736	36.8	1264	63.2	2000

p. value (0.003 HS)

Table (6) shows that 35.8% of male parents were trust the vaccine while 27.4% of female parents were trusted the vaccine.

Table (7): Relation between Do you trust the vaccine & Do vaccines prevent diseases.

Do you trust the vaccine? * Do vaccines prevent diseases?						
		Do vaccines prevent diseases?				
		No(N)	%	Yes(N)	%	Total
Do you trust the vaccine?	no	368	18.4	896	44.8	1264
	yes	0	0	736	36.8	736
Total		368	18.4	1632	81.6	2000

p. value (0.001 HS)

Table (7) shows that there was a relation between people trust the vaccine and there believe that vaccine prevent disease. 44.8% of participants don't trust that vaccine prevent

diseases while 36.8% trust that vaccine prevent diseases.

Table (8): relation between Academic achievement & Is it important to be given the vaccine.

Academic achievement * Is it important to be given the vaccine?						
		Is it important to be given the vaccinee?				
		No(N)	%	Yes (n)	%	Total
Academic achievement	Educated	368	18.4	1104	55.2	1472
	No educated	0	0	528	26.4	528
Total		368	18.4	1632	81.6	2000

p. value (0.001 HS)

Table (8) shows that 55.2% of educated parents said that vaccine is important to be given while only 26.4% of didn't educated parents said that vaccine is important to be given.

Table (9): relation between Academic achievement & Is the vaccine safe for the child.

Academic achievement * Is the vaccine safe for the child?						
		Is the vaccine safe for the child?				
		No	%	yes	%	Total
Academic achievement	Educated	368	18.4	1104	55.2	1472
	No educated	0	0	528	26.4	528
Total		368	14.8	1632	81.6	2000

p. value (0.001 HS)

as we shown in tables (6), (7), (8) and (9) there are a high significance data variable between parameters study. Respectively at p. value (less than 0.01).

Table (10): frequency of parents there called natural immunity better than the vaccine.

Is natural immunity better than the vaccine?			
Parameters		Frequency	Percent
Valid	no	736	36.8 %
	yes	1264	63.2 %
	Total	2000	100 %

Table (10) shows that 63.2% of participants believed that natural immunity better than the vaccine while 36.8% weren't believe that natural immunity better than the vaccine.

Table (11): Relation between age and parents that believe in vaccine.

age * do you believe in vaccine						
		do you believe in vaccine				
Parameters		No(N)	%	Yes	%	Total
Age	less than 30	513	25.65	1233	61.65	1746
	above than 30	77	3.85	177	8.85	254
Total		590	29.5	1410	70.5	2000

Table (11) shows that there were a relation between age and parents that believe in vaccine. 61.65% of Parents less than 30 years were believe in vaccine while 8.85% of parents above 30 years old were believe in vaccine.

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Table (12): Relation between gender and believe in vaccine.

gender * do you believe in vaccine						
Parameters		do you believe in vaccine				Total
		No(N)	%	Yes(N)	%	
Gender	Female	253	12.65	637	31.85	890
	Male	337	16.85	773	38.65	1110
Total		590	29.5	1410	70.5	2000

Table (12) shows that there was a relation between age and parents that believe in vaccine. 31.85% of female were believe in vaccine while 70.5% of male parents were believe in vaccine.

Table (13): Relation between living site and believe in vaccine.

Living * do you believe in vaccine						
Parameters		do you believe in vaccine				Total
		No	%	yes	%	
Living	City center	192	9.6	1280	64	1472
	countryside	398	19.9	130	6.5	528
Total		590	29.5	1410	52.5	2000

Table (13) Shows that there was a relation between parents living site and believe in vaccine. 64% of city center living parents were believe in vaccine while only 6.5% of country side living parents were believe in vaccine.

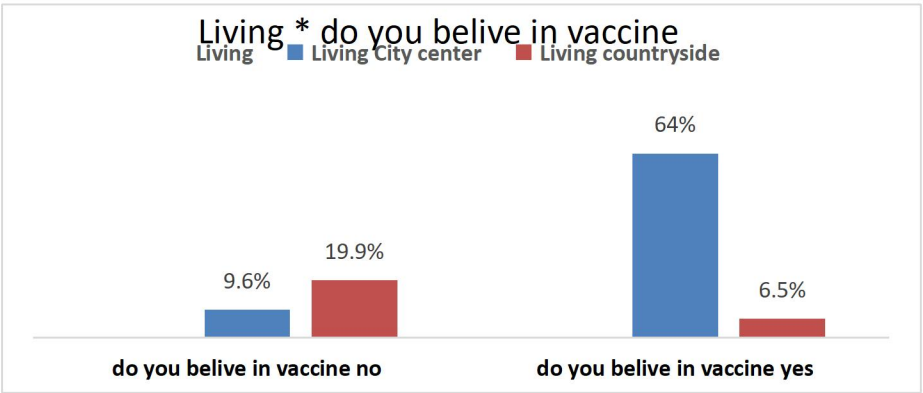

Figure (7): Relation between living site and believe in vaccine.

Figure (7) Shows that there was a relation between parents living site and believe in vaccine. 64% of city center living parents were believe in vaccine while only 6.5% of country side living parents were believe in vaccine

Table (14): Relation between Academic achievement and believe in vaccine.

Academic achievement * do you believe in vaccine						
Parameters		do you believe in vaccine				Total
		No(N)	%	Yes(N)	%	
Academic achievement	Educated	192	9.6	1280	64	1472
	No educated	398	19.9	130	6.5	528
Total		590	29.5	1410	52.5	2000

Table (14) shows that there 64% of educated parents were believe in vaccine while 6.5 of non-educated parents were believe in vaccine.

Table (15): Relation between Occupation and believe in vaccine.

Occupation * do you believe in vaccine						
Parameters		do you believe in vaccine				Total
		No(N)	%	Yes(N)	%	
Occupation	Employee	142	7.1%	962	48.1%	1104
	Unemployed	448	22.4%	448	22.4%	896
Total		590	29.5%	1410	70.5%	2000

Table (15) shows that there 48.1% of employed parents were believe in vaccine while 22.4% of non-employed parents were believe in vaccine.

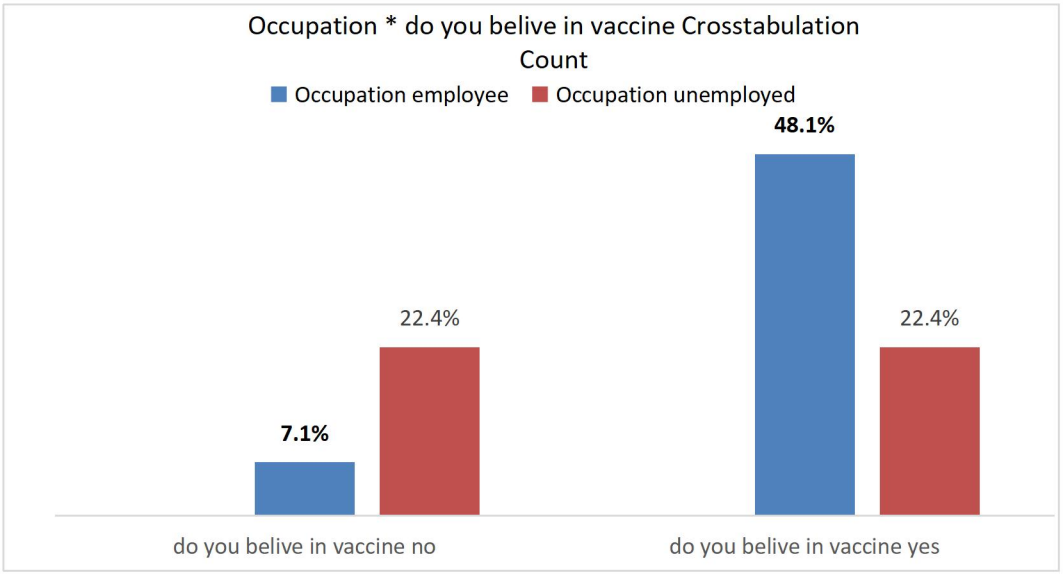

Figure (8): Relation between Occupation and believe in vaccine.

Figure (8) shows that there 48.1% of employed parents were believe in vaccine while 22.4% of non-employed parents were believe in vaccine

Discussion

Vaccines are a breakthrough in modern medicine and are the most effective intervention against infectious diseases, such as measles or COVID-19. Of the vaccines recommended by health organizations, the benefits outweigh the risks. Nevertheless,

vaccination rates are often too low to cross the critical threshold of herd immunity, which is required to eliminate a disease. Behavioral science offers several ideas about what it takes to get people to vaccinate. The 3 main propositions are that vaccination results from: 1) what people think and feel; 2) social processes; and 3) direct behavior change **(Geiger et al., 2021)**

There is a high significant when examine how parental attitudes and beliefs towards childhood vaccination in a significant level of 0.05 and below with statistical significance (0.001 High-significance data variable) this is due to the data with the higher average, as shown in the tables and graphs above. More than three fifth of parents believe in children vaccination. This result was in accordance with in agreement with **(Makarić et al., 2018)** who conducted a study entitled " Attitudes and beliefs related to childhood vaccinations among parents of 6 years old children in Zagreb, Croatia" who found that 72.6% (n = 385/531) respondents feel that childhood vaccination should be vaccinated. This result was in accordance with in disagree with **(Santibanez et al., 2020)** who conducted a study entitled "Parental vaccine hesitancy and childhood influenza vaccination" who found that; the prevalence of concern and believe about serious, long-term side effects impacting the parent's decision to get their child vaccinated was 27.3% in 2018 and 21.7% in 2019.From the researcher point of view this due to difference of culture and education of parents.

This study has a number of significant findings. The vast majority of parents were supportive of childhood vaccination although a considerable proportion expressed concerns related to the safety of vaccines. This result was in accordance with in agreement with **(Korn et al., 2020)** who conducted a study entitled " Vaccination as a social contract " who found that; 90% of participants support vaccination and consider it as social contract wherein
getting vaccinated is the morally right behavior. From the researcher point of view this due to vaccines support controlling and eliminating infectious diseases.

This result found that more than one third of females parents who participated in the study, don't believe in the vaccination. This result was in agreement with **(Nurmi & Harman, 2020)** who conducted a study entitled " Why do parents refuse childhood vaccination? Reasons reported in Finland" who found that;38% of parents don't believe in the vaccination. From the researcher point of view this due to distrust – participants did not trust vaccination recommendations made by health officials and medical professionals due to perceived bias in medical research, ties between health officials and the pharmaceutical industry, and personal experiences of (suspected) adverse effects and the way these concerns were received in healthcare institutions; 3) health perceptions and practices – parents supported their vaccination choices with complementary and alternative medicine treatments and alternative health understandings and their believe about risks and effects of vaccination.

This result found that three forth of the uneducated parents do not believe in vaccines. This result was in disagreement with **(Zychlinsky et al., 2022)** who conducted a study entitled "Students' age and parental level of education influence COVID-19 vaccination hesitancy" who found that 68.3% of participants don't believe in vaccination Age and parental level of education influenced COVID-19 vaccine hesitancy. Children under the age of 16 as well as students whose parents had lower education levels showed significantly higher vaccine hesitancy. From the researcher point of view this due to decrease their parents knowledge about the importance of vaccination.

This study showed that three forth rural living parents don't believe in vaccination. This result was in disagreement with **(Musa et al., 2021)** who conducted a study entitled " A qualitative interview study with parents to identify barriers and drivers to childhood vaccination and inform public health interventions" who found that only one third of rural parents were vaccine hesitant. From the researcher point of view this due to individual factors (capability–knowledge and skills; motivation–attitudes, confidence and trust) and context factors (physical opportunity–information, access, health systems; and social opportunity – social support, norms).

Conclusion

From this data we can conclude there was aa high significance data analyzed in paternal attitude and beliefs in children vaccination and there are essential in life to get vaccination from the modern disease. People who do not believe in the vaccine may be because they are uneducated, uneducated, and unemployed. They lack basic information about how the vaccine works in the human body, or they live in remote areas where there are no health centers, or their presence is rare in remote areas, which results in a loss of health culture, including vaccination with vaccines. It is important to take vaccines to avoid contracting diseases and reduce complications in the event of infection.

Methods to measure parental attitudes and beliefs about vaccination could be improved with validated and standardized yet flexible instruments, supplemented with qualitative investigations. The use of a standard set of validated questions should be encouraged in this area of study to identify, track, and monitor longitudinal trends using quality data.

Recommendation:

Based on the study, the following recommendations are suggested:

- Health education program about the importance of vaccination.
- Ongoing research about how to decrease vaccine hesitant.

Conflict of Interest:

The authors declare no conflict of interest

References

Aberumand, B., Ayoub Goulstone, W., & Betschel, S. (2022). Understanding attitudes and obstacles to vaccination against COVID-19 in patients with primary immunodeficiency. *Allergy, Asthma & Clinical Immunology*, *18*(1), 38.

Abo El nour, R.A & Abdelzaher, M. A. (2024). Towards Good Health and Well-Being; Risk Factors Assessment for Side Effects of Spinal Anesthesia. Egyptian Journal of Health Care, 15(2), 565-573.

Aboelnour, R. A. E. (2022). Assessment of Female Students Knowledge and Self-esteem regarding Sexual Harassment at Beni-Suef University. *Helwan International Journal for Nursing Research and Practice*, *1*(2), 1-14.

Alabadi, M., & Aldawood, Z. (2020). Parents' knowledge, attitude and perceptions on childhood vaccination in Saudi Arabia: a systematic literature review. *Vaccines*, *8*(4), 750.

Ajam, W. H., Shaker, M. S., Alsaffar, M. F., Abdelzaher, M. A., Al-Kawaz, H. S., & Slama, F. B. H. (2024). Insulin Resistance and Triglyceride/HDL Cholesterol ratio: Interrelation with Atherosclerosis and Coronary Artery disease. *Hammurabi Journal of Medical Sciences*, *1*(1), 17-24.

Excler, J. L., Saville, M., Berkley, S., & Kim, J. H. (2021). Vaccine development for emerging infectious diseases. *Nature medicine*, *27*(4), 591-600.

Fayed, A. M., Abdelzaher, M. A., Mahdi, N. H., AlKhafaf, D. M., AbdElRahman, M., Aldhalmi, A. K., ... & Morsi, S. E. S. (2024). Effect of ginger, chamomile, and green tea extracts on prostate cancer cells. *Journal of Genetic Engineering and Biotechnology*, *22*(3), 100395.

Geiger, M., Rees, F., Lilleholt, L., Santana, A. P., Zettler, I., Wilhelm, O., ... & Böhm, R. (2021). Measuring the 7Cs of vaccination readiness. *European Journal of Psychological Assessment*.

Hani Nief, A., Abdullah Jassim, M., Abdulwahab Mohsin, Z., Hazim Shahad, M., Ali Shallan, M., Awad Kadhum, R., ... & Abd Elmohsen Abo El Nour, R. (2024). Investigation and Evaluation of Blood Pressure after Spinal Anesthesia. *Egyptian Journal of Health Care*, *15*(3), 1130-1137.

Korn, L., Böhm, R., Meier, N. W., & Betsch, C. (2020). Vaccination as a social contract. *Proceedings of the National Academy of Sciences*, *117*(26), 14890-14899.

Makarić, Z. L., Kolarić, B., Tomljenović, M., & Posavec, M. (2018). Attitudes and beliefs related to childhood vaccinations among parents of 6 years old children in Zagreb, Croatia. *Vaccine*, *36*(49), 7530-7535.

Melovic, B., Jaksic Stojanovic, A., Vulic, T. B., Dudic, B., & Benova, E. (2020). The impact of online media on parents' attitudes toward vaccination of children—social marketing and public health. *International Journal of Environmental Research and Public Health*, *17*(16), 5816.

Meyer, C. U., & Zepp, F. (2022). Principles

in Immunology for the Design and Development of Vaccines. *Vaccine Design: Methods and Protocols, Volume 1. Vaccines for Human Diseases*, 27-56.

Musa, S., Kulo, A., Bach Habersaat, K., Skrijelj, V., Smjecanin, M., & Jackson, C. (2021). A qualitative interview study with parents to identify barriers and drivers to childhood vaccination and inform public health interventions. *Human vaccines & immunotherapeutics*, *17*(9), 3023-3033.

Nayir, T., Nazlican, E., Şahin, M., Kara, F., & Meşe, E. A. (2020). Effects of immunization program on morbidity and mortality rates ofvaccine-preventable diseases in Turkey. *Turkish Journal of Medical Sciences*, *50*(8), 1909-1915.

Nurmi, J., & Harman, B. (2022). Why do parents refuse childhood vaccination? Reasons reported in Finland. *Scandinavian Journal of Public Health*, *50*(4), 490-496.

Nuwarda, R. F., Ramzan, I., Weekes, L., & Kayser, V. (2022). Vaccine hesitancy: contemporary issues and historical background. *Vaccines*, *10*(10), 1595.

Santibanez, T. A., Nguyen, K. H., Greby, S. M., Fisher, A., Scanlon, P., Bhatt, A., ... & Singleton, J. A. (2020). Parental vaccine hesitancy and childhood influenza vaccination. *Pediatrics*, *146*(6).

Shukatka, O., & Kryvoruchko, I. (2023). THE HISTORICAL BACKGROUND OF THE VACCINATION OF MANKIND. *INNOVATIVE MANAGEMENT OF BUSINESS INTEGRATION AND EDUCATION IN TRANSNATIONAL ECONOMIC SYSTEMS*, 118.

Zychlinsky Scharff, A., Paulsen, M., Schaefer, P., Tanisik, F., Sugianto, R. I., Stanislawski, N., ... & Melk, A. (2022). Students' age and parental level of education influence COVID-19 vaccination hesitancy. *European journal of pediatrics*, 1-6.