

Myths and Misconceptions of Covid-19 Vaccination in Women of Reproductive Age

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COVID-19 has been with us for more than 3 years. Now we know a lot about this infection, and we are a little relaxed that its vaccine is available. There are a lot of myths and misconceptions about it in public, some are specially obstetrics and gynecology related. We can divide three years of COVID-19 into three phases based on our knowledge about it. The first phase was the initial phase which was managed based on our background concepts of viral infections and pandemics. The second phase was when we had some experience and hope of vaccine coming. Third and the current phase is when we have the vaccine and are using it. Misconceptions appeared in all these stages. They spread in public faster than the facts because of social media. Now we are dealing with the myths about COVID-19 vaccination. I will talk about misconceptions about the COVID vaccination that we face in obstetrics and Gynecology clinics routinely.

A very common question in women of reproductive age is that the vaccine will cause Infertility. This concept started from the false report that spike proteins of vaccine Biotech (Pfizer) and Moderna are like spike proteins of Synticin1 that is involved in the growth and attachment of the placenta.^{1,2} Hence it causes infertility and in general public, this effect was considered for all the vaccines. The fact is that both Pfizer and Moderna vaccines are messenger RNA

vaccines. They make the cells in the body to produce proteins similar to spike proteins of corona virus and body produces antibodies against it to fight COVID infection. Spike proteins of vaccine and Synticin1 are two different proteins. Studies about these vaccines have shown that these two vaccines have not increased infertility in women trying for pregnancy, even by IVF.³ Sinopharm is the commonest vaccine used in Pakistan for initial vaccination. This is a classic inactivated virus vaccine. It has no similarity to Synticin.¹ None of the studies has shown its effect on fertility.

The second common misconception is that the vaccine came quickly so its safety and efficacy is not trusted, it was available free of cost to the public and they were encouraged to get it. The facts are majority of vaccines are 88 to 95% affective. Sinopharm is 79% effective. No severe or life-threatening affects are seen with any of these vaccines. China shared the genetic information of Corona Virus quickly and the development of vaccines started early. Most of the vaccines are made by the methods which were already there for other vaccines. Vaccine producing companies have large resources and some of the countries paid in advance to develop the vaccine. Companies started producing vaccine even before FDA approval and were ready to roll it out as soon as approval came. Many countries rushed to get the vaccine and provided it

free of cost to their population. The reason was it was a pandemic and cost, and implication of infection was much more than providing free vaccine.

Another misconception was getting COVID-19 infection due to vaccine. Especially pregnant women were worried. Fact is none of the COVID-19 vaccine contains live virus. Pfizer and Moderna contain messenger RNA which instructs the body to produce proteins like spike proteins of virus not live virus. Sinopharm contains inactivated virus. It only produces immune response, not the disease.

Some worries were about dangerous side effects of COVID-19 vaccines. The fact is the vaccine can have side effects, but most are not dangerous, are self-limiting, and only lasts for a couple of days. They are pain at the injection site, body aches, sometimes fever. Pregnant women may get some nausea. There was once reporting of the possibility of thrombosis after the Johnson and Johnson vaccine. This is not used in our country. Vaccine Adverse Event Reporting System (VAERS) of US says even minor side effects were not all due to the vaccine.

Another confusion was that vaccines will change the human genetic system. Probably it was because some vaccines are messenger RNA. It is very clear they are messenger RNA not DNA. They enter the cell but not the nucleus. Sinopharm is not RNA, it is an inactive virus and can't change DNA.

There are some concerns that vaccine contains some controversial substances like microchips, tracking devices, fetal tissue, implants, antibiotics, magnets. Fact is that vaccines only contain fats salt and sugar. Currently no available microchips and magnets are small enough to be injected by a needle. Sinopharm contains inactive viruses

which are inactivated by a chemical beta propiolactone so virus can't replicate.

It was because of all the above myths on social media and spread by the word of mouth many people especially pregnant and breast-feeding mothers avoid getting the vaccine. In fact, they are among the groups who are more vulnerable to infection, and it prevents slowing down and transmission of infection if they are not vaccinated. Remember the facts, if a pregnant woman gets COVID infection She has double chances of admission in hospital and be on ventilator as compared to non-pregnant women and 70% increased risk of death. She is at higher risk of getting pregnancy complications, like preterm birth, caesarean section, increased blood pressure and risk of still birth. Vaccine does not cross placenta but antibodies can cross the placenta and are secreted in breast milk so they will protect the newborn from the infection. In pregnancy and breastfeeding benefits of vaccine outweighs the risks. Now in the CDC's COVID-19 vaccine in pregnancy register, 185000 women responded in the vaccine safety tracking system.

CDC recommends COVID-19 vaccination to the ladies who are planning pregnancy, who are pregnant or breast feeding. It recommends booster dose to these ladies as well.^{4,5} ACOG (American college of Obstetricians and Gynecologists) and Society of maternal fetal medicine in the USA recommend vaccination in pregnant and breast-feeding mothers. According to RCOG (Royal College of Obstetricians and Gynecologists), all pregnant women will be offered COVID vaccination when their age group is called (RCOG vaccination guideline). In UK pregnant women are considered a priority group for vaccination.^{6,7} Recommended vaccines in

UK are Pfizer, Moderna, Astrazeneca, Janssen and Novavax.

In Pakistan Pfizer, Moderna and Sinopharm is used. UK Teratology Information Service (UKTIS) monograph says non-live vaccines are Hepatitis A, B, seasonal flu, Rabies, tetanus, polio HPV, meningococcal and COVID-19. No previous data about them shows that they are harmful during pregnancy while data about some is limited. UKTIS recommends exposure to non-live vaccine at any stage of pregnancy is not an indication for termination of pregnancy or extra monitoring during pregnancy. Remember Sinopharm is the first Chinese vaccine which was authorized by WHO for an emergency.

The conclusion from all the above discussion is that COVID-19 vaccine is safe for women during reproductive age. It does not cause infertility, and can be given during pregnancy and breastfeeding.

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