The Adverse Events Of The Astrazeneca Covid-19 Vaccine At The Family Health Hospital, Ghana.

Kwawukume SB[1]*, Puplampu P[1,2] , Fleischer-Djoleto CE[1]

[1] Department of Medicine, Family Health Medical School, Family Health University College, Teshie, Ghana
[2] Department of Medicine, University of Ghana Medical School, College of Health Sciences, Korle Bu Teaching Hospital, Accra, Ghana.

***Corresponding Author: Susu B. Kwawukume**
Address: Department of Medicine, Family Health University College, Teshie, Ghana Phone: +233 244318183 Email: susubridget@yahoo.com

Abstract

Introduction: The AstraZeneca COVID-19 vaccine, now called Vaxzevria, is a viral vector vaccine against COVID-19 with efficacy of 63.09% against symptomatic SARS-CoV-2 infection. Like other vaccines it may have some adverse reactions in some individuals. This study was therefore, carried out to comprehensively document reactions experienced by patients after the 1st dose of the AstraZeneca COVID-19 vaccine at the Family Health Hospital, Teshie, Ghana.

Methods: A telephone survey using structured questionnaire was conducted among individuals who took the 1st dose of the vaccine at the facility. Data on both local and systemic side effects within 14 days of vaccination were collected with Google forms, entered into Excel 2016 and exported to Statistical Package for Social Sciences (SPSS version 26) for analysis.

Results: Four hundred and twenty- six of the 607 participants in this study (70.2%) self-reported one or more adverse effects. There were 289 (47.6%) males and 318 (52.4%) females. Headache and fatigue were recorded as the most prevalent side effects among the study participants (42.2% and 36% respectively). Of these, 42.3% experienced systemic reactions, 22.9% experienced local reactions and 34.8 experienced both local and systemic reactions. Reactions lasting 24 hours or less were experienced among 34.3% and those lasting longer than 24 hours to 48 hours were experienced among 56.8% of respondents and the rest after 48 hours.

Conclusion: The study revealed that most adverse reactions from AstraZeneca COVID-19 vaccine were mild systemic reactions treatable with analgesics like Paracetamol and short-lived in duration.

Keywords: COVID-19, Adverse events, AstraZeneca vaccine

Introduction

The coronavirus disease, (COVID-19), is associated with symptoms such as shortness of breath, dry cough, headache, fatigue, vomiting, fever, nausea, anosmia, ageusia, rhinorrhoea and myalgia.[1] First identified in Wuhan, China, Severe Acute Respiratory Syndrome CoronaVirus-2 (SARS-CoV 2), the virus responsible for the coronavirus disease is epidemiologically linked to a seafood and wet animal wholesale market in Wuhan, Hubei Province.[2] From China, the virus has since spread across regions of the world claiming the lives of 93,000 people globally as of 2nd May, 2021.[3] The virus is transmitted via respiratory droplets from face-to-face contact or contaminated surfaces.[4] Common complications of the COVID-19 disease include pneumonia, acute respiratory distress syndrome, acute liver failure, acute myocardial injury with

troponin elevation, shock and acute cerebrovascular disease.[5,6]

After several research aimed at controlling the spread of the disease, COVID-19 vaccines were developed and authorized for use in various areas of the world. Ghana was among the countries that received the COVID-19 vaccines through the COVAX Facility. These AstraZeneca vaccine doses, which were developed by the Serum Institute of India (SII), were then administered intramuscularly across the nation. The first phase of the vaccination program was primarily focused on healthcare workers, aged population and individuals with underlying medical conditions such as hypertension, asthma and diabetes. Being a new vaccine, there have been concerns, questions and major controversies regarding its side effects and safety across the country. Although thorough investigations on the vaccine's safety profiles were done before its authorization for use, the frequency and degrees of adverse reactions from vaccinations are likely to vary depending on the region and ethnicity.[7] Thus, it is important to investigate the occurrence of adverse reactions after vaccination among diverse population and regions. The study therefore, sought to investigate the adverse reactions of individuals who were vaccinated at the Family Health Hospital, Teshie, in order to evaluate the safety of the COVID vaccines among the Ghanaian population as well as provide empirical knowledge regarding the possible side effects from Covid vaccinations in the African sub-region.

Methods

This survey was conducted from March 9 to May 20, 2021, to determine the adverse effects of the 1st dose of the AstraZeneca COVID-19 vaccine. The study participants were 607 individuals who took the 1st dose of the vaccine at the Family Health Hospital, Teshie at Accra, Ghana. Using a structured questionnaire, telephone interviews were conducted and responses were entered electronically into Google forms. Verbal consent was obtained from the respondents prior to conducting the interviews that lasted 5-7 minutes. The study questionnaire was made up of four sections namely demographic information, existing medical history, vaccination information and adverse effects of the 1st dose of the vaccine. Data collected with Google forms was transferred into Excel 2016 and cleaned. This was exported to Statistical Package for Social Sciences (SPSS version 26) for the analysis. Frequency and Percentages were used to describe data. Chi-square test of independence was used to assess the association between variables. Bivariate risk analysis was also performed. Information was presented with narration tables.

Results

Six hundred and seven (607) participants consented to participate in the telephone survey. Four hundred and twenty-six (70.2%) of these, self-reported one or more adverse effects, the mean age of participants was 44.0 (SD 18.12) years. The study included 289(47.6%) males and 318 (52.4%) females. Almost all 605/607 (99.7%) were formally educated. Most, 475/607 (78.3) respondents had tertiary education. Two hundred and seventy-two of the 607 participants (44.8%) were staff of Family Health University College. Gender, educational status and medical history of study participants had significant association with presence of adverse effects of the COVID-19 vaccine (Table 1).

Table 1 Association between experience of adverse effect and independent variables

Variable	Total	Adverse effect		RR(CI)	P - value
		Yes	No		
Gender					
Male	289(100)	186(64.4)	103(35.6)	1.17(1.05-1.05)	0.00*
Female	318(100)	240(75.5)	78(24.5)		
Age group					
18-30	166(100)	136(81.0)	32(19.0)		0.00*
31-40	136(100)	100(73.5)	36(26.5)		
41-50	89(100)	49(55.1)	40(44.9)		
51-60	69(100)	42(60.9)	27(39.1)		
61-70	81(100)	47(58.0)	34(42.0)		
>70	64(100)	30(46.19)	34(53.1)		
Allergic reaction from past vaccine					
Yes	43(100)	34(79.1)	9(20.9)	0.87(0.74-1.03)	0.18
No	564(100)	392(69.5)	172(30.5)		
Profession					
Formal	234(100)	169(72.2)	65(27.8)		0.00*
Health professional	31(100)	17(54.8)	14(45.2)		
Informal	113(100)	76(67.3)	37(32.7)		
Nurse	60(100)	47(78.3)	13(21.7)		
Retired	80(100)	44(55.0)	36(45.0)		
Student	89(100)	73(82.0)	16(18.0)		
Highest level of education					
No education	2(100)	0(0)	2(100)		0.02*
Primary	10(100)	7(70)	3(30)		
JHS	30(100)	16(53.3)	14(46.7)		
SHS	90(100)	59(65.6)	31(34.4)		
Tertiary	475(100)	344(72.4)	131(27.6)		
Presence of co-morbidity					
Yes	143(100)	90(62.9)	53(37.1)	1.15(1.00-1.32)	0.03*
No	464(100)	336(72.4)	128(27.6)		
Acute illness on past 30 days prior to vaccination					
Yes	42(100)	35(83.3)	7(16.7)	0.83(0.71-0.96)	0.05
No	565(100)	391(69.2)	174(30.8)		
Positive to Covid-19 test					
Yes	50(100)	30(60.0)	20(40.0)	1.18(0.93-1.49)	0.10
No	557(100)	396(71.1)	161(28.9)		
On medication prior to taking vaccine					
Yes	117(100)	73(62.4)	44(37.6)	1.15(0.99-1.34)	0.04*

Of the 426 participants who experienced side effects, 42.3% experienced systemic reactions, 22.9% experienced local reactions and 34.8 experienced both local and systemic reactions (Table 2).

Table 2 Distribution of adverse effects of vaccine on respondent

Adverse event	Total N=607	Female(n)	Male(n)	P value
Injection site reactions	201	124	77	0.01*
Feeling tired (fatigue)	219	130	89	0.10
Headaches	256	152	111	0.12
Chills	146	88	58	0.06
Muscle aches	186	115	77	0.08
Joint pains	110	64	46	0.10
Feeling feverish	180	109	71	0.19
Feeling Sick (Nausea)	107	67	40	0.06
Feeling unwell	171	108	69	0.08
Decrease appetite	79	50	29	0.13
Abdominal pain	24	14	10	0.65
Enlarge lymph nodes	16	9	7	0.42
Flu-like Symptoms (Sore throat)	35	19	16	0.48
Difficulty Breathing	11	6	5	0.40
Swelling of face and throat	12	8	4	0.68
Fast heartbeat	22	15	7	0.39
Itchy skin or rash	12	8	4	0.50
Feeling dizzy	84	57	27	0.01*
Excessive sweating	16	7	9	0.63

Abbreviations: N, Total number of participants; n, number of participants in groups; *, significant

Reactions lasting 24 hours or less were experienced among 34.3% and those lasting longer than 24 hours to 48 hours were experienced among 56.8% of respondents and 9.5% after 48 hours. Headache 256/607 and fatigue 219/607 were recorded as the most prevalent adverse effects among both male and female participants (Table 2). However, significantly more females reported reaction at injection site (P = 0.01) and there was significant association between gender and experience of dizziness, P = 0.01. The adverse effects were more common among females than males. Difficulty in breathing was the least recorded adverse effect. Other rare adverse effects were hallucinations, body stiffness, swollen arm, unusual warmth, severe pain in the throat and back, vomiting, pains at the knee joints and abnormal sleep patterns.

Discussion

The study investigated self-reported adverse effects following administration of the 1st dose of the AstraZeneca COVID-19 vaccines used in Ghana. From the results, injection site reactions, fatigue, headache, chills, muscle aches and nausea were the common post vaccination adverse reactions. This is in line with the findings of other studies conducted in the USA.[4] These were minor and temporary side effects, which are common post COVID-19 vaccination adverse events observed also in the UK.[8]

Most reactions were experienced within the first day of vaccination with few reporting symptoms two to three days after vaccination. Majority of the participants experienced symptoms that lasted up to 48 hours with a few of participants reporting symptoms that lasted more than 72 hours. The results also showed significant variation in experience of adverse events among the genders. Females experienced significantly more adverse events.

Since the study is based on self-reports, there is the likelihood of under reporting from both genders. However, studies show that females are likely to report symptoms more often than their male counterparts.[9] This could explain the variation observed

and vaccine response also points at a larger issue concerning how women process and are physiologically affected by medications. Studies report that women are more aware and attentive of bodily stimuli and changes than males.[10] Thus, it may happen that although males in the study experienced similar adverse events as the females, the lack of body awareness affected their perception of adverse events. Future studies should consider studying post COVID-19 vaccination adverse events under controlled clinical conditions for clarity regarding the gender differences in adverse events experienced. The study also revealed a significant effect of clinical history on experience of adverse events. Most of the individuals who indicated having acute illness a month prior to vaccination, reported adverse events after vaccination. This was the same with individuals who indicated living with co-morbidities or chronic illness.

From the study, it was also evident that more of the participants who tested to Covid-19 reported experiencing adverse events. This observation is consistent with studies in the UK.[8] According to the study, increased immunogenicity in individuals with past infection explains this observation although the hypothesis remains to be tested. Study findings also showed that a significant number of participants who indicated they were on medication prior to taking vaccine reported adverse events. Further study should be done with this population to understand how other drugs react with the COVID-19 vaccine. The findings also show that majority of participants reported experiencing systematic adverse events, such as headaches, fever, fatigue and nausea which are self- limiting or treatable with analgesics like Paracetamol. From our findings, it is possible to speculate, that so far, the AstraZeneca COVID-19 vaccine has been shown to be safe among Ghanaian the population. However, there is the need for ongoing research to assess the long term effects of the COVID-19 vaccines.

In conclusion, the study revealed that most adverse effects reported by participants are short-lived in duration, mild in severity and treatable with analgesics. Adverse effects are more frequently reported in females, individuals living with co-morbidities and among those who previously had COVID-19. The post-vaccine symptoms (both systemic and local) often lasted 1–3 days from the time of vaccination.

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Conflict of interest

The authors declare that they have no competing interests.

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