ASSESSMENT OF H1N1 INFLUENZA: A SWINE FLU VACCINATION IN KUMASI, GHANA

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ABSTRACT
This study was carried out to assess H1N1 vaccination in the Kumasi metropolis of the Ashanti Region of Ghana. Questionnaires on the subject were administered to 504 individuals comprising of 254 health personnel and 250 from the general public (in a cross-sectional survey) after an initial interview of 1,686 individuals. Data obtained was analyzed using Sigma Plot 11. Three sixty four (72.2 %), and 390 (77.4 %) of the study participants responded that education on H1N1 flu and the side effects of the vaccine respectively were not extensive. Prior to the vaccination, 310 (61.5 %) of respondents were not interviewed on their health status. Three hundred and seventy eight (75.2 %) respondents suffered some side effects after vaccination. Of those, 363 (96 %) suffered side effects lasting up to a week. Due to the severity of the side effects, 154 (40.7 %) took medications after the vaccination to ameliorate the effect. Of all those who experienced adverse effects, only 105 (28 %) reported these to a health facility. One hundred and seventy seven (35.1 %) said there should be discontinuation of the vaccination programme due to the side effects observed. Vaccination is one of the most effective means to control pandemics such as H1N1 flu, therefore education on the pandemic and possible side effects of vaccination should be done well to encourage the public to patronize in such exercises. Emergency services should also be provided at all vaccination centers to attend to individuals who may be infected or may react to the vaccine.

INTRODUCTION
H1N1 influenza A swine flu is a respiratory disease caused by a new strain of influenza A virus subtype H1N1 that infect the respiratory tracts of pigs and result in nasal secretions, barking-like cough, decreased appetite and listless behavior in humans (CDC, 2010; Davis and Stöppler, 2011). In April, 2009 an outbreak of this flu created concerns that a new pandemic was occurring and by June 2009 (Trifonov et al., 2009), the World Health Organization's (WHO) pandemic alert level was six; having nearly 30,000 confirmed cases worldwide. The outbreak began in the state of Veracruz, Mexico, with evidence that there had been an ongoing epidemic for months before it was officially recognized as such (McNeil and Donald, 2009). This was the first pandemic on this level since 1968 (Chan, 2009).
In the African Region; at as 26th May, 2010, 35 countries had officially reported 18,598 laboratory confirmed human cases of pandemic (H1N1) 2009 including 168 deaths (GHS, 2009). The first case of H1N1 flu in Ghana was reported in August 2009 and by the end of 2010 about 907 cases had been confirmed with the death of one infant (AMA, 2010). A voluntary vaccination against the Influenza H1N1 started on 14th June, 2009 and to date 2 million doses had been administered. A total of 306,592 persons were vaccinated against the influenza as of the end of July, 2009. Those vaccinated included 266,687 health workers, 15,811 security personnel, 24,496 pregnant women, 18,836 people with chronic diseases, 12,867 international travelers and 207,895 from the general public (AMA, 2010). From the above mentioned data, it can be said that the H1N1 pandemic flu posed a great threat to the public health and that measures had to be set up to prevent the spread of the disease.

The 2009 H1N1 pandemic flu vaccination in Ghana was accompanied with a host of rumors (unconfirmed reports) about the manifestations of severe side effects, complications, and death of some individual after vaccination. This study therefore aimed at assessing the level of awareness of the pandemic and the adverse effects experienced after the H1N1 vaccination in the Kumasi Metropolis of the Ashanti Region of Ghana. Such evidence will inform policy makers and public health practitioners about the successes and failures of the H1N1 vaccination campaign. The study will also reveal public perception and attitudes towards vaccination in general.

MATERIALS AND METHODS
Study Design and Methodology
The study was a cross-sectional survey conducted in the Kumasi metropolis, the second largest city of Ghana and the Capital of the Ashanti Region. Sampling was based on the premise that in the Ashanti region 102,592 persons were vaccinated against the influenza as of the end of July 2010.

Of 1,686 encountered in market places, lorry stations, churches, student hostels, police and military barracks, 504 persons (comprising of 254 health personnel, 250 non-health personnel from the general public) had taken the vaccine and were therefore recruited by convenience for the purpose of this study. The data collection instrument was a structured questionnaire consisting of close and open ended questions on the subject. Researchers were however available to give clarification to individuals who needed help in understanding the questions. Questionnaire responses were entered into the Statistical Package for Social Scientists (SPSS) version 17; where tallying, ranking, percentages checks and descriptive analyses were undertaken. Graphs were made with SigmaPlot version 11.

Ethical Consideration
Consent of Medical Administrators of the various Health facilities visited as well as the individuals vaccinated was obtained through formal notification before the study was commenced.

RESULTS
Dermographics
Five hundred and four (504) persons; 254 (50.3 %) health personnel and 250 (49.7 %) individuals from the general public, made up of 247 (49 %) males and 257 (51 %) females were interviewed. One hundred and fifty seven (61.8 %) of the health personnel of various categories (Figure 1) worked in hospitals, 61 (24 %) in community pharmacies and 36 (14.2 %) in clinics. Four hundred and thirty (85.5 %) of the respondents were aged between 21-40 years (Figure 2). Most of the members of the general public were students (28.8 %) and security personnel (27.6 %) as shown in Figure 3. Of the general public; 85 % had either high school education, or were undergraduates or graduates in tertiary education (Figure 4).

Public Education on H1N1 pandemic
A total of 364 respondents (72.2 %) made up of both health workers and members of the general public thought that public education on
Assessment of H1N1 influenza

Fig. 1: The category of health personnel interviewed. N= 254

Fig. 2: Age distribution of respondents: N=504
Fig. 3: The category of members of the general public interviewed. N=250

Fig. 4: The level of literacy of members of the general public interviewed. N=250
H1N1 flu was not extensive (Figure 5). For instance, only 90 (36 %) of members of the general public had heard of H1N1 Swine Flu while 81 (32.4 %) knew the part of the body affected. Public education on the side effects of vaccination was also not satisfactory as reported by 390 (77.4 %) respondents (Figure 6).

**Fig. 5:** The view of health personnel (N=254) and the general public (N=250) on how well public education on the pandemic was done

**Fig. 6:** The view of health personnel (N=254) and the general public (N=250) on how well public education on side effects of vaccination was done
Side effects of the vaccination

Prior to vaccination, questions on the state of health of the respondents were supposed to be asked, however 310 (61.5 %) respondents were not asked any question. Three hundred and seventy eight (75.2 %) respondents suffered some side effects after vaccination; 90 (24 %) had headaches, 79 (21 %) had fever and 57 (15 %) felt dizziness among others (Figure 7). Three hundred and nineteen (84.3%) individu-

![Fig. 7: Side effects experienced. N=378](image)

![Fig. 8: Number of side effects experienced. N=378](image)
als experienced up to three side effects whiles 59 (15.7%) experienced more than three side effects (Figure 8). Three hundred and sixty three (96%) respondents suffered side effects lasting up to a week with 226 (59.8%) individuals having effects lasting 2-5 days (Figure 9). Due to the severity of the side effects, 154 (40.7%) of the respondents took medications after the vaccination to ameliorate the effect.

Despite rumors of death after vaccination, 489 (97%) respondents did not know anyone who had died while 15 (3%) individual speculated from the side effects experienced that there could have been deaths. Of all those who experienced adverse effects, only 105 (28%) reported these to a health facility.

Should vaccination be continued?
While 307 (60.9%) of the respondents supported the continuation of the vaccination (but with better education on side effects on the vaccine), 177 (35.1%) said it should be discontinued due to the side effect observed. The remaining 20 (4.0%) were not sure of what was to be done.

Readiness for Treatment of an Infection
In the health facilities visited, 166 (66%) health personnel interviewed claimed their facilities did not have available any drugs for treating the flu in case people came in infected.

DISCUSSION
Vaccination against H1N1 flu commenced in Ghana with security personnel and health professional. It was then extended to the general public. The number of health professional and members of the general public who had taken the vaccine was just satisfactory (compared the number of individuals encountered prior to the study) with the proportion of males to females being very close. The questionnaire was self-explanatory and was administered to respondents who were educated so the responses obtained were a true reflection of the situation on the ground.

Although 1,686 persons (equal number of males and females) were initially interviewed only 504 individuals had taken the vaccine. One thousand, one hundred and eighty two had not taken the vaccine because they had not heard of the disease, or were afraid to vaccinate.
due to rumors of severe potentially serious side effects. Over 70% of health workers and the
general public indicated that education on the
pandemic was not done well. In a pandemic
such as this, both health personnel and mem-
bers of the general public should have been
well educated via all forms of media (flyers,
radio, TV spots, newspaper, and meetings).
Awareness creation of a pandemic of this mag-
nitude was the most appropriate strategy of
getting all individuals to know and appreciate
the health hazard at hand so that they could
avail themselves for the need to vaccination
(Ngan et al., 2011). Thus, public health work-
ners involved in vaccination should educate their
patients on the benefits, safety, and risks of
vaccines in a culturally appropriate and easy-to-
understand language prior to each vaccination
(Pickering et al., 2009). Side effects of the vac-
cine should have been mentioned with reassur-
ance of safety so that it does not cause fear and
panic in the populace.

Prior to vaccination, pertinent questions relat-
ing to the vaccine and the health status of the
individuals should have been asked to ascertain
safety. Observation of valid contraindications
and precautions was critical to ensure that vac-
cines were used as recommended to obtain op-
timal safety. A generic contraindication for all
vaccines is prior anaphylactic reaction to a vac-
cine or a vaccine constituent (Pickering et al.,
2009). Most (61.5%) of the respondents were
not asked any questions and 75.2% suffered
adverse effects. Most definitely, some of the
side effects (headache, fever, dizziness, general
malaise, and diarrhea) could have been the re-
sult of allergic reactions (Cunha and Stöppler,
2011) to vaccine constituents. The fact that
84.3% of side effect sufferers had up to three
effects and 96% had effects lasting up to a
week suggests that much discomfort was
caued to the individuals. It was therefore not
surprising that 40.7% had to take various
medications to help relieve their symptoms.

Majority (72%) of the general public did not
report the severe side effects to health facilities,
perhaps due to poor adverse effect reporting

CONCLUSION
Vaccination is one of the most effective means
to control pandemics such as H1N1 flu. Public
education on pandemics and side effects of
vaccination should be done well to encourage
the populace to patronize in such exercises.
Emergency services should be provided at all
vaccination areas to attend to individuals who
may react with the vaccine. Appropriate
measures should be put in place by the Ministry
of Health to allay the fears of people when
there are issues of severe side effects. This will
improve compliance by the target groups. Even
though vaccination could be going on, the
health facilities should be equipped with drugs
for treatment.

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