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RESEARCH ARTICLE

ASSESSING THE KNOWLEDGE OF FOURTH YEAR PHARMACY STUDENTS IN GHANA ON PHARMACOVIGILANCE

Anakua Princess C
Faculty of Pharmacy and Pharmaceutical Science, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

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Abstract

According to the Uppsala Report for 2016, Ghana was among the countries with a low range of 5-50 reports per 1,000,000 population in a year. This research sought to establish a possible connection between lack of knowledge and underreporting. The study involved an observational, cross sectional survey of fourth year pharmacy students. A self-administered, anonymous questionnaire was designed using google forms and distributed to the students via web link which was shared using the social media platform, WhatsApp. The collected data was coded and entered into Microsoft Excel 2016 and a codebook was created using Microsoft Word 2016. The mean knowledge of respondents showed that majority of them had basic knowledge about pharmacovigilance. Though most of the students did not know about any adverse drug reaction reporting centers in Ghana and drugs banned due to these reactions. This could promote underreporting and administration of dangerous drugs making these future pharmacists renege on their commitment to be 'friends of the human race' (i.e. Amicus Humani Generis). Hence it is of utmost importance that these aspects be added to the course outline to improve their knowledge.

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Introduction:-

The two most important concepts in pharmacovigilance are opposites, i.e. harm and safety. The usual term for harm related to medicine useare classified as Adverse Drug Reactions (ADRs). The incidence of these reactions has contributed to mortality, morbidity, hospitalizations and has resulted in additional cost to the patient, the healthcare system and the society as a whole. It has been estimated that approximately 2.9-5% of all admissions into hospitals are caused by ADRs and 35% of patients experience ADRs during their stay in the hospital. About 0.23-0.4% are fatal. Although most of them are mild and disappear when the drug is stopped or the dose has been reduced (Srinivasan R. and Ramya G., 2011). A prospective study showed that ADRs increased the mean hospital stay from a mean of 8 days in patients without ADRs to 20 days in patients with ADRs and also displayed an increased risk of mortality in patients who experienced an ADR compared with those who did not (Davies E.C. et al, 2009). The impact and the management of ADRs is complex and in the USA may cost up to 30.1 billion dollars annually (Davies E.C. et al, 2009). There is however, limited data on the economic and social burden of adverse drug reactions in African countries including Ghana.

Corresponding Author:- Anakua Princess C
Address:- Faculty of Pharmacy and Pharmaceutical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

The Food and Drugs Authority (FDA) is the National Pharmacovigilance Centre that coordinates Pharmacovigilance activities in Ghana. They also collaborate with the Public Health Programmes to ensure that medicines used in these programmes are safe, efficacious and of good quality. As with most spontaneous pharmacovigilance systems, the pharmacovigilance system in Ghana is still plagued with underreporting. In 2015, the FDA received a total of 697 spontaneous reports, with the population of Ghana being 27.41 million. This made the number of spontaneous reports received per 1,000,000 population in that year to be 12.7% of the WHO-UMC recommendation of 200 reports per 1,000,000 population per year (Agbeko, 2016).

Health professionals like pharmacists, doctors and nurses are the key players in spontaneous ADR reporting because they are directly involved in medicines use and are well informed of the expected and unexpected effects of medicines. Data has shown that pharmacists are the most likely healthcare professionals to report a suspected ADR, having sent over 50% of the received ADR reports (Waller, 2006). This is probably due to the fact that pharmacists handle a large portion of the drugs on the market firsthand compared to other healthcare professional and also because they are the category of healthcare professionals who will be notified in case of any adverse drug reaction, and also because the pharmacovigilance "contact persons" in the hospitals are mostly pharmacists hence they will be contacted if a reaction to a particular medicine is suspected. A study carried out in the Ashanti region of Ghana, showed that 49.5% of practicing pharmacists had excellent knowledge on the ADR reporting system in Ghana and 86.3% of them agreed that introducing pharmacovigilance into the curriculum of pharmacy education as a course would improve ADR reporting (Agbeko,2016).

Although, pharmacist report more ADRs than other healthcare professionals, there are still ADRs that go unreported. This is most likely due to different reasons including lack of knowledge about the reporting system, complacency, uncertainty about causality, lack of time and workload, insecurity and legal issues, desire to publish rather than report, the need for reward or recognition for reporting, absence of the reporting form, lack of confidence on the reporting system and finally some pharmacists may consider ADR reporting not part of their responsibility (Vallano et al., 2005). But most importantly underreporting could be due to the fact that upcoming health care professionals do not have substantial knowledge of the reporting systems and procedures involved in adverse drug reaction reporting (Walker and Whittlesea, 2012). It is important for the students in the healthcare sector, especially pharmacy students, to be properly sensitized to these adverse drug reactions and should be made aware of its seriousness and the importance of reporting them. This could impact their attitude towards patient care and issues of patient safety when they begin their practice as pharmacists. Other researchers (Manjunath et al., 2015; Sivadasan et al, 2014; Elkalmi et al., 2011) have done similar studies in other countries but such has not been done in Ghana.

Based on the foregoing evidences, the current study focused on collecting baseline information on the knowledge and perceptions of pharmacy students on ADRs and pharmacovigilance. The participants of this study were culled from the three pharmacy training institutions in Ghana, which are Kwame Nkrumah University of Science and Technology located in Kumasi, University of Ghana located in Accra and Central University located at Miotso. For the purpose of the study the target population were the fourth-year pharmacy students in each respective institution

Methods:-

Study design:

The study involved an observational, cross sectional survey of fourth year pharmacy students in Ghana. The questionnaire was adapted from similar studies which investigated the knowledge and awareness of pharmacovigilance among medical fraternities (Ponmari, et al., 2015) and fifth term medical students at the Basaveshwara Medical College and Hospital, India (Manjunath, et al., 2015). The questionnaire was designed to capture among other information, the students' knowledge of pharmacovigilance, its structures and their perception towards ADR reporting. The questionnaire was piloted, using five respondents, and the necessary corrections made by way of rephrasing and rearrangement of sentences to eliminate ambiguities.

Study population:

The participants of this study were culled from Kwame Nkrumah University of Science and Technology located in Kumasi, University of Ghana located in Accra and Central University located at Miotso. These institutions were chosen because they are the only ones currently offering the Pharmacy programme, with students in the fourth year, in Ghana. Pharmacy students from other years in each institution were excluded from the study.

Sampling:
Each tertiary institution had different number of students. For Kwame Nkrumah University of Science and Technology located in Kumasi, there were a total of 206 students, for University of Ghana located in Accra, there were 42 students and for Central University located at Miotso there were 240 students, making a total of 488 students. A sample size calculation was done with an online sample size calculator in which a 90% confidence level was used. The estimated sample size was calculated to be 174 students.

Data collection:
A self-administered, anonymous questionnaire was designed using google forms and distributed to the three tertiary institutions via web link which was shared using the social media platform, WhatsApp. The data collection took place between 15th February and 3rd April 2015. A time frame of 6 weeks was allowed for the collection of the filled questionnaires after which accepting of responses was brought to a halt.

Data processing and analysis:
The collected data was coded and entered into Microsoft Excel 2016 and a codebook was created using Microsoft Word 2016. The data was checked for its completeness, consistency and accuracy. The data was analyzed using Microsoft Excel 2016 and presented using charts and figures where appropriate.

Results:-

Attitude/ perception analysis towards reporting adverse drug reactions:

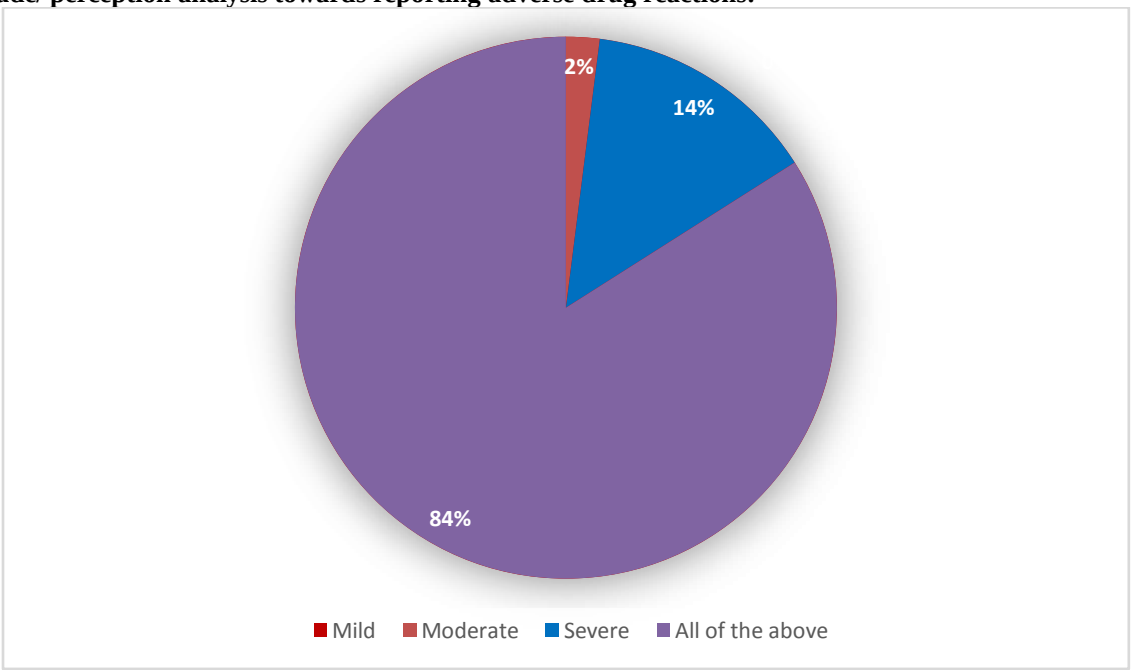

Fig 1:- Distribution of student's opinions on types of ADRs to be reported.

Knowledge of pharmacovigilance structures:

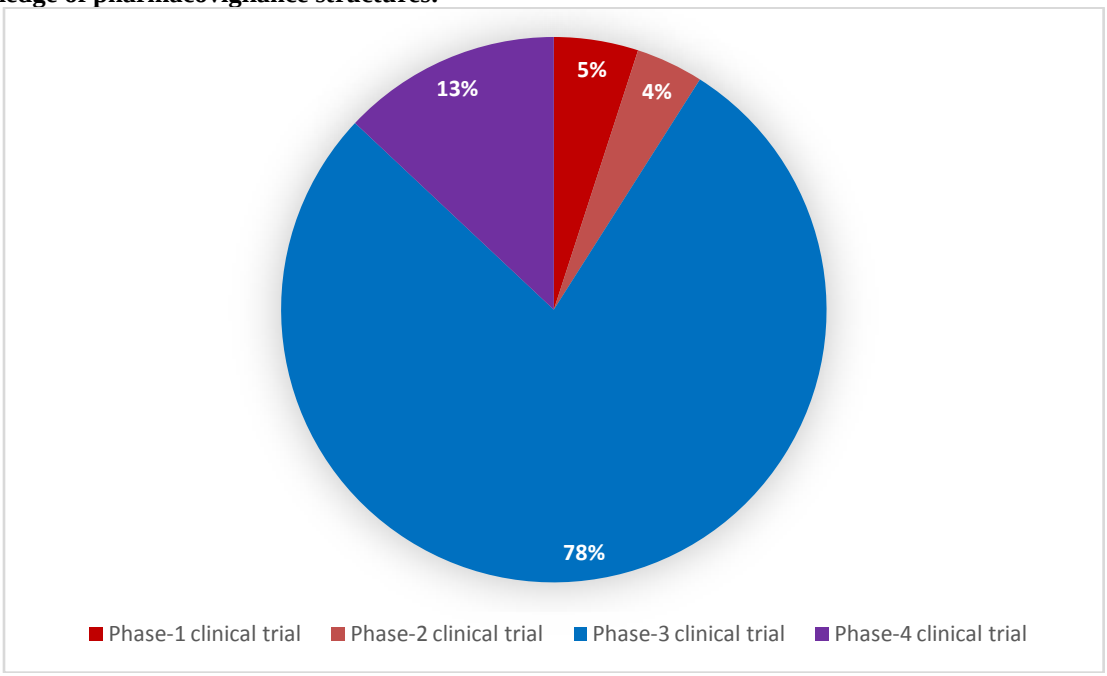

Fig 2:- Distribution of student's opinions on the phase of clinical trials in which rare ADRs are identified.

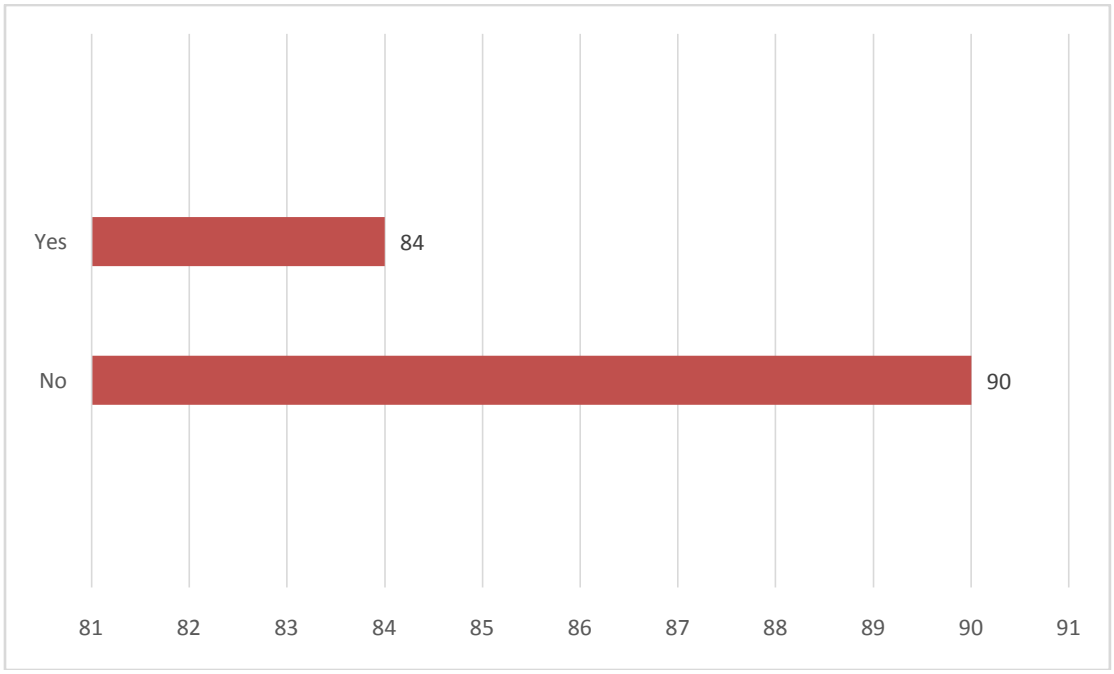

Fig 3:- Distribution of student's answers on whether they knew any ADR reporting center in Ghana.

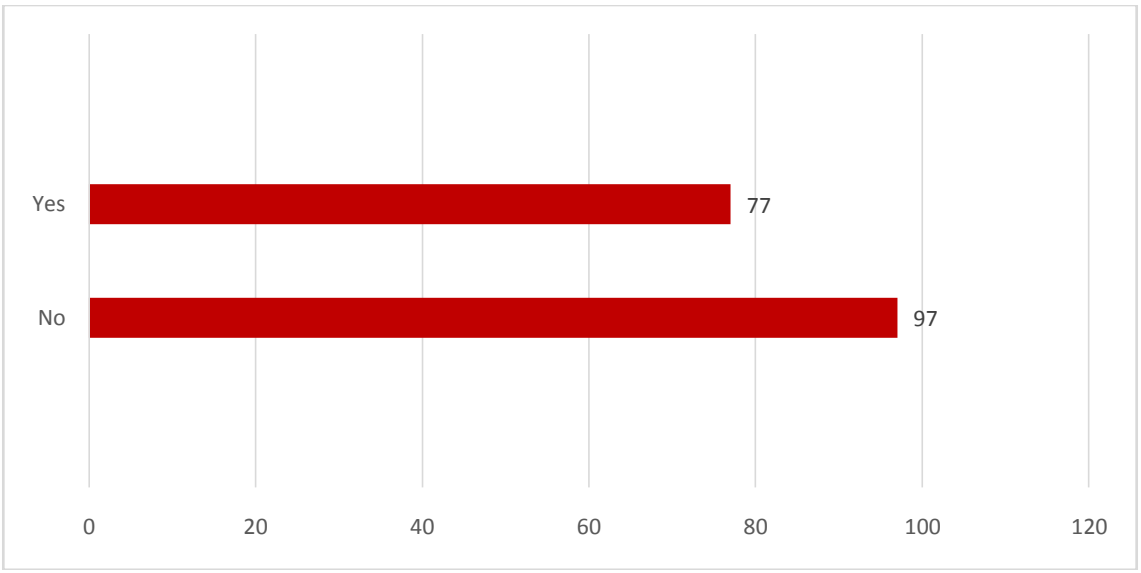

Fig 4:- Distribution of student's answers on whether they knew any drug banned in Ghana due to ADRs.

Discussion:-

ADR reporting as a professional obligation will have moral binding to healthcare professionals. Hence having a good perception towards reporting of ADRs, may improve the ADR reporting rate in the future when the students become practicing pharmacists. In the present study, 55.7% of the students believed that ADR reporting is a professional obligation. This value was slightly lower (52.6%) in a previous study (Sivadasan et al.), carried out on final year pharmacy students. In Sivadasan et al study about 13.1% pharmacy students strongly disagree that only serious and unexpected ADRs must be reported. In the current study 84% of the students agreed that all ADRs should be reported irrespective of the severity. While 66.66% of students also agreed to this in a similar study (Manjunath et al, 2015).

In the current study, it was observed that the overall result was encouraging, considering the fact that all the students had basic knowledge on pharmacovigilance and were aware of the term pharmacovigilance, its activities, what type of ADRs should be reported, regulatory bodies for monitoring ADRs, the healthcare professionals responsible for reporting ADRs. This result is probably due to the fact that they have been taught about detection, assessment, understanding and prevention of adverse drug reaction to a certain extent in their syllabus in the institutions currently training pharmacy students and also the students understood and were able to recall what they had learnt. But there were a few grey areas observed considering that most students did not know the phase of clinical trials in which rare ADRs are observed, any reporting center in Ghana and any drug that was banned in Ghana due to its ADR. Possible reason being that the students were not taught in their respective institutions. It is important for the student to be aware of ADRs reporting centers in their countries, because if they are not then even if they know all about the how, when and why of ADR reporting, they have no idea as to who or where they should go to report them. This could hinder the reporting of ADRs. Likewise, the students should be aware of drugs that have been banneddue to their ADRs, especially those in their country, so that if by chance they come across any banned medication they would be the wiser and not administer or aid in its distribution to the public.

Limitations and Recommendations:-

Due to the fact that this study was conducted with fourth year pharmacy students in three schools of pharmacy in Ghanaian universities, the findings may not be confidently extrapolated to the practicing pharmacists. It would be logical to extend this type of study to practicing pharmacists in Ghana to obtain more generalizable results.

In addition to that, it is possible that due to the absence of a person to supervise at the time in which the forms were being filled, the respondents could easily access the internet to find answers to the questions. In subsequent studies face to face interviews may be the preferred route of administration of the questionnaires.

Conclusion:-

The mean knowledge of respondents showed that majority had basic knowledge about pharmacovigilance though most of the students did not know about any ADR reporting center in Ghana and drugs banned in Ghana due to ADRs. This could promote under reporting and administration of dangerous drugs making these future pharmacists renege on their commitment to be 'friends of the human race' (i.e. Amicus Humani Generis). Hence it is of utmost importance that these aspects be added to the course outline to improve their knowledge.

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