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Research Article

Physicians' knowledge, attitude, practice and perceived barriers to subject recruitment for randomized controlled trials in Ghana.

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Abstract

Objectives: This study assesses the knowledge, attitude, practice and perceived barriers to subject recruitment into randomized controlled trials, and determine strategies to maximize subject recruitment and retention.

Methods: A cross sectional, quantitative survey of 73 physicians working in Ghana was conducted assessing their knowledge and attitude towards randomized controlled trials, subject recruitment practices, self-reported barriers to subject recruitment and strategies to enhance subject recruitment.

Results: Responses from 73 Ghanaian physicians were analyzed. 23 (31.5%) respondents knew of ongoing clinical trials in their specialty in Ghana while 32 (43.8%) physicians knew about trials in their specialties in various places in the world. 23 (31.5%) physicians responded that they had referred patients for recruitment into clinical trials before. 49 (67.1%) respondents had never referred any patient for recruitment into clinical trials.

Conclusion: Most Ghanaian doctors are unaware of ongoing trials in their specialty and thus do not refer patients for recruitment.

Key words: subject recruitment; randomized controlled trials; ghanaian physicians

Introduction/Background

Randomized Controlled Trials (RCTs) is a study design in which subjects are randomly assigned an intervention, with or without study participants and/or investigator(s) being blinded to the intervention, with the aim of determining whether there exists a cause-effect relationship between intervention and outcome. It can also help to determine the superiority, equivalence or inferiority between two interventions. RCT is the most rigorous way of determining the size of difference in pre-defined outcomes between intervention groups [1]. Despite its usefulness, healthcare situations exist where using this study design is inappropriate due to practical and ethical reasons [2]. For instance, for very rare disease conditions where subject recruitment will be a challenge, case reports and case control studies may be the only available source of evidence.

The concept of Randomized Controlled Trials is not new in Africa as some key research projects, particularly into communicable diseases like Malaria, Tuberculosis, Leprosy, Human Immunodeficiency Virus infection etc, have been conducted in Africa, mostly through Non-Governmental Organizations (NGOs) and WHO sponsored programmes. However, sub-Saharan Africa is still grossly under-represented in the global distribution of clinical trial sites, which should not be the case. This is because Africa has a large 'treatment'- naive population with high incidence rates of diseases e.g. colorectal cancer, who present late with advanced stages of the disease.

ClinicalTrials.gov [3] currently lists 342,900 studies located in 216 countries, the whole of Africa accounting for 2.97% (i.e. 10,201 of 342,900) of all the studies, the bulk of which is in South Africa (27.3%) and Egypt (41.8%). Ghana currently accounts for 177 of 10,201 (1.7%) as against 103 of 4408 (2.34%) in 2015 [4]. Factors postulated as being responsible for this, as in other African countries include: poor infrastructure, underdeveloped health systems [5]. Poverty, illiteracy, cultural practices and beliefs which gender distrust, insufficient trained personnel in clinical trial conduct, as well as absence of sufficiently rigorous regulation to protect study subject [6]. Other barriers include time constraint on the part of the physician and difficulties including identified eligible patients [7].

Subject recruitment into clinical trials is crucial to the successful conduct of any clinical trial. However, subject recruitment has remained a challenge worldwide, with recruitment being slow and failing to meet recruitment goals in time [8]. Different figures have been quoted by various studies. One study estimates that 85% of trials fail to conclude on schedule due to low participant accrual, 60% to 80% of clinical trials in the United States do not meet their temporal endpoint due to recruitment challenges, and 30% of trial sites fail to recruit even a single participant [9]. Other studies opine that less than a third [10] and estimated 80% of

clinical trials fail to meet their recruitment timelines [11]. Low enrolment can result in a trial being abandoned [12]. A costly outcome that can harm the credibility of individual investigators and their institutions [13].

Physicians are involved in RCT either as investigators or refer patients for recruitment. Therefore, their awareness of ongoing clinical trials and the right attitude towards their patients' participation can determine their willingness to enrol or refer their patients to participate in clinical trial. In sub Saharan Africa where there is low level of literacy among patients, physicians serve as adviser to patients in matters relating to their health, and thus can influence patients' decision in trial participation. There are several studies that have focused on physicians' knowledge, attitude and practices that relate to specific disease entities in Ghana, but none that assesses the role of physicians in clinical trial recruitment as it relates to their knowledge, attitude and practices. This study proposes to identify the knowledge and attitude of physicians practicing in Ghana towards clinical trials and how this affects subject recruitments into clinical trials in Ghana. Based on findings, appropriate recommendations will be made that can guide stakeholders in appropriate policy formulation with regards to clinical trials.

Methods

This study is a Cross-sectional quantitative survey of selected medical doctors practicing in Ghana during the study period. The sampling method was non-probability purposive method, targeting practicing physicians in various specialties in Korle Bu Teaching Hospital. The limitation with this sampling method is that it is impossible to know how well the sample population is representative of the general population compared to a probability sampling method. Sample size was calculated to be 73.

All of the respondents were medical doctors working in Korle Bu Teaching Hospital, Accra, Ghana. Korle Bu Teaching Hospital is the foremost teaching hospital in Ghana, with a bed capacity of 2000 [14]. There are over 700 medical doctors of different cadre and specialty working there, constituting about 20% of the country's physician population.

Most of the doctors there came from district hospitals in all the regions in Ghana and were undergoing specialist training in various specialties. They later return to their various primary hospitals after the required training. Thus, the physician population here approximately reflects a cross section of physicians in Ghana.

Online survey was utilized. Data was collected using semi-structured, self-administered, anonymous questionnaires. Survey monkey was used to administer the online survey and reminders sent to improve response rate. The survey period was between July 2015 and November 2015.

The physicians' e-mail addresses were obtained from the hospital's personnel record office after obtaining permission from the medical directorate of the hospital. Questionnaires were sent to all the contacts obtained. The first 10 respondents were used to pilot the study and pre-test the questionnaire for acceptability, validity etc. Those respondents who participated in the pilot survey were not invited for the main survey. For the main survey, the first 73 respondents were included in the study. Reminder e-mails were sent to participants after 1, 2, 3 and 4 weeks to increase response rate.

Three hundred and fifty physicians' contacts were accessible and these were invited to participate in the survey. Eighty-four responded, giving a response rate of 24%.

Each participant was provided with participant information sheet on the front page of the questionnaire, explaining the study aim, assurance given on confidentiality and contact information provided for correspondence if the need arises. A section detailing the consent process was also provided on the front page of the questionnaire.

The questionnaire had 26 questions distributed within a patient information sheet/consent and 4 sections. Section 1 was on participants' personal demographics and professional characteristics and had five questions bordering on sex, age, cadre and specialty. Date and time of response were also required.

Section 2 had seven questions on the physicians' Knowledge about RCTs in their specialty within and outside Ghana, including the clinical trial registry (clinicaltrial.gov). Section 3 had five questions on physicians' attitude towards RCTs in terms of its scientific benefit in furthering medical knowledge as well as its impact on the respondents' medical practice.

Section 4 had eight questions on physicians' participation in subject recruitment into clinical trials, perceived barriers to widespread clinical trial conduct in Ghana, as well as suggestions on ways of mitigating these problems

Data were summarized using percentages, tables and charts, and analysed with SPSS version 21. Pearson Chi-square test and Fisher's Exact Test were used to find out the strength of association between variables. The independent variable being physicians' level of training (cadre) and the dependent variables her/his subject recruitment practice. The null hypothesis was that there is no difference in subject recruitment practice amongst the physicians based on their cadre. The level of significance is at p-value of ≤ 0.05.

Results

A total of 350 physicians in Korle Bu Teaching Hospital whose e-mail addresses could be accessed from the hospital records were invited to the survey. 82 responded to the survey giving a low response rate of 23.4%. 73 of this number were considered for analysis based on the completeness of their responses.

53(72.6%) were males and 20(27.4%) were females (Table 1)

Sex	Frequency	Percent
Male	53	72.6
Female	20	27.4
Total	73	100.0

Table 1: *Gender of the responder*

Age distribution (Table 2) showed a modal age range of 31-40 years (50.7%), followed by ages 21-30 years (27.4%). The age range with the least number was 51-60 years (2.7%). The mean age was 35 years (SD 7.5)

Age range	Frequency	Percent
21-30 years	20	27.4
31-40 years	37	50.7
41-50 years	14	19.2
51-60 years	2	2.7
Total	73	100.0

Table 2: *Age of the respondent*

The respondents included 4 (5.5%) interns, 11 (15.1%) medical officers, 23(31.5%) resident doctors, 19 (26%) senior resident doctors and 16 (21.9%) consultants (Figure 1).

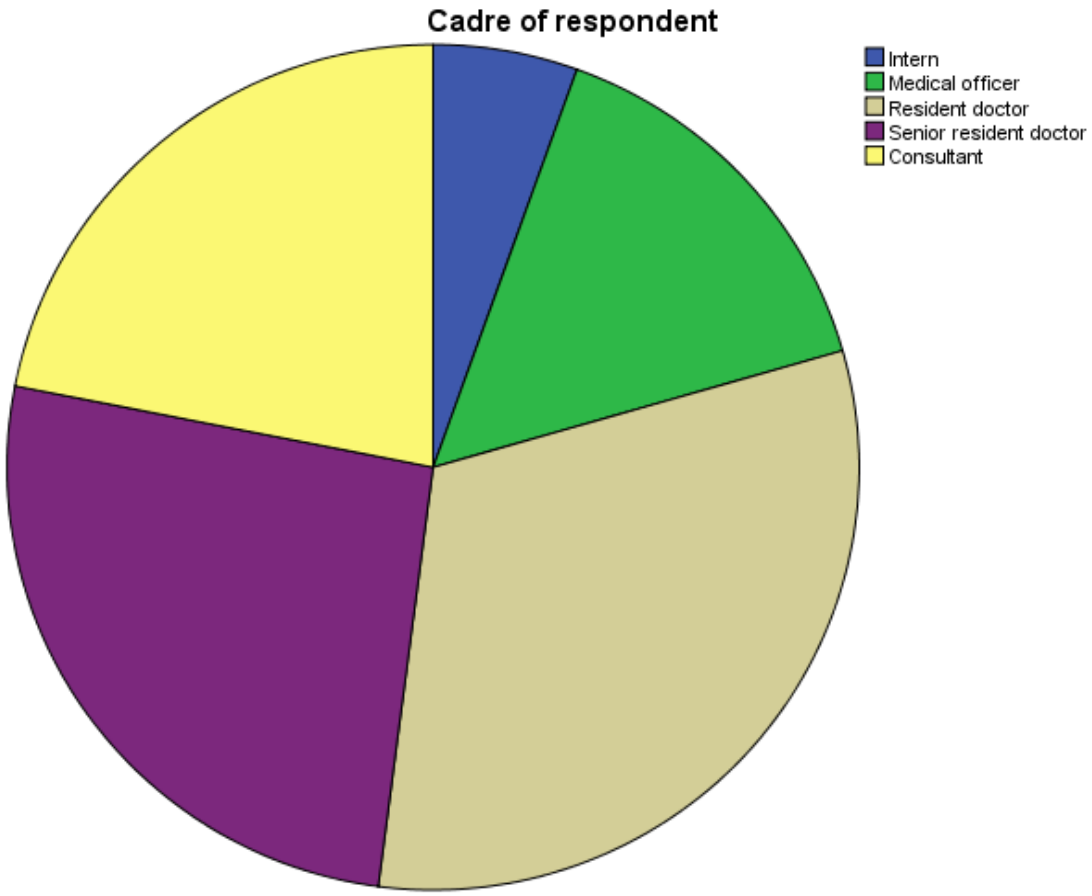

Figure 1: *Cadre of Respondent*

The distribution of the area of specialization of respondents is described in Figure 2. Of the 73 respondents 20 (27.4%) were from general surgery, 14 (19.2%) from Anaesthesia and 11 (15.1%) from Neurosurgery. These three specialties topped the list of respondents making up 61.7%.

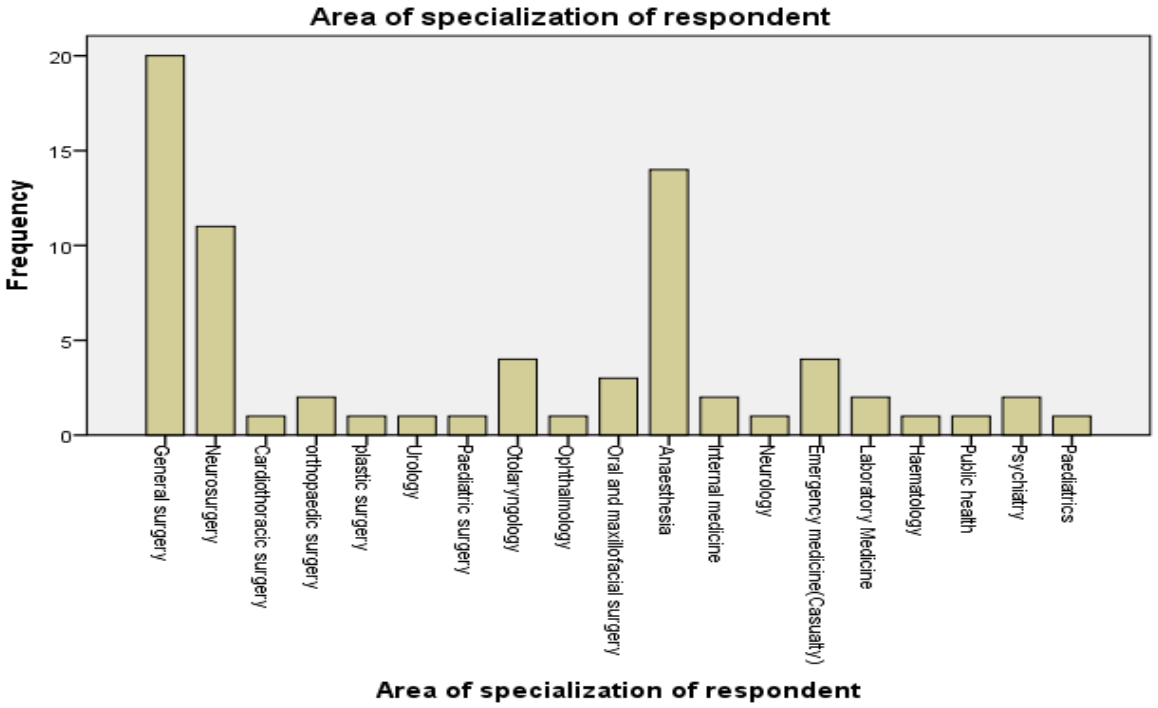

Figure 2: *Area of Specialization*

S/No	Questions	Yes (%)	No (%)	Missing data (%)
1.	Do you know about clinicaltrial.gov?	20 (27.4)	53 (72.6)	0 (0)
2.	Do you know of any ongoing clinical trial in your specialty anywhere in the world?	32 (43.8)	41 (56.2)	0 (0)
3.	Do you know of any ongoing clinical trial in your specialty in Ghana?	23 (31.5)	50 (68.5)	0 (0)
4.	Have you been involved in the conduct of any Randomized Controlled Trials?	20 (27.4)	52 (71.2)	1 (1.4)
5.	Have you had any training on the conduct of randomized controlled trials?	16 (21.9)	57 (78.1)	0 (0)
6.	Would you refer your patients for recruitment in a clinical trial if you were aware of one?	72 (98.6)	1 (1.4)	0 (0)
7.	Have you searched for any ongoing clinical trial for your patients in the last 3 months?	9 (12.3)	63 (86.3)	1 (1.4)
8.	Have you referred patients for recruitment in clinical trials before?	23 (31.5)	49 (67.1)	1 (1.4)
9.	Have you reviewed clinicaltrial.gov for ongoing trials in the last 3 months?	3 (4.1)	69 (94.5)	1 (1.4)
10.	Do you discuss ongoing clinical trials with your patients?	17 (23.3)	55 (75.3)	1 (1.4)
11.	Do you incorporate results of randomized controlled trials into your clinical practice?	58 (79.5)	13 (17.8)	1 (1.4)

Table 3: *Respondents' Knowledge, Attitude and Practice*

			Cadre of respondent					Total
			Intern	Medical officer	Resident doctor	Senior resident doctor	Consultant	
Have you referred patients for recruitment in clinical trials before?	Yes	Count	1	1	7	5	9	23
		Std. Residual	.0	-1.3	-.1	-.4	1.7	
	No	Count	2	10	16	14	7	49
		Std. Residual	.0	.9	.1	.3	-1.2	
Total		Count	3	11	23	19	16	72

Table 4: *Have you referred patients for recruitment in clinical trials before? * Cadre of respondent Crosstabulation*

To test for association between the physicians' subject recruitment practice and their cadre, a Pearson Chi-square test was done as shown in Tables 4 and 5. The null hypothesis was that there is no difference in the physicians' subject recruitment practice across the various cadre. P-value of ≤ 0.05 was taken as statistically significant. Pearson Chi-square value of 7.294 (p = 0.121) was not statistically significant. The Fisher's Exact Test with value of 7.068 (p = 0.115) was also not statistically significant. Therefore, the null hypothesis failed to be rejected.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	7.294[a]	4	.121	.119		
Likelihood Ratio	7.590	4	.108	.141		
Fisher's Exact Test	7.068			.115		
Linear-by-Linear Association	4.212[b]	1	.040	.043	.025	.011
N of Valid Cases	72					

Table 5: *Chi-Square Tests*

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 2.96.

b. The standardized statistic is -2.052.

Respondents gave several barriers to subject recruitments into clinical trials in Ghana as enumerated below in respondents' own words with minimal grammatical corrections.

1. Physicians' lack of knowledge of ongoing trials, ethical concerns and patients' sociocultural factors.

2. Ignorance and illiteracy

3. Few trials going on and not many clinicians are involved

4. Lack of adequate information to address and allay fears of the public and participants

5. The guinea pig perception, the population isn't well oriented, poor communication on the part of investigators, unacceptable incentives.

6. Lack of technical expertise.

7. Lack of resources and funds

8. Perceived to be non-beneficial to the subjects.

9. Lack of research grants and resources

10. Lack of education of the populace concerning the benefits of clinical trials.

11. Lack of publicity of trials.

12. Fear of adverse reactions

13. Distance, when patients have to pay out of pocket for their care.

14. Apathy on the part of clinicians towards involving younger clinicians in their research.

15. Patients not willing to be part of studies.

16. Increased work load including paperwork, time consuming

17. Loss to follow up due to economic hardship and literacy level.

18. Lack of insight into the benefits of clinical trials for humanity and the progress of medicine.

The respondents suggested strategies that can enhance subject recruitment and retention in Ghana as listed below.

1. Public sensitization and formal training of clinicians on clinical trials.

2. Making doctors and other health workers who are not in a particular field aware of upcoming trials so that they may be able to refer their patients who may be willing to be subjects of the trial will help in a way.

3. Proper education of the general public on the importance of evidence-based medicine and the role of clinical trials.

4. Seek for major funds for trials

5. Increased commitment on the part of investigators to be professional, truthful and uphold guiding ethics of clinical research.

6. Periodic dissemination of information of ongoing RCTs and requests for more recruits.

7. Attractive incentives to patients like waivers for fees and medications

8. Incentives to physicians for extra workload.

9. Published results of ongoing trials should be made available to physicians and the general public to encourage interest for participation.

10. Reduction of paperwork burden.

Discussion

Randomized controlled trial is the gold standard of clinical research. One of its challenges is the issue of recruitment of subjects into the study. Several factors have been reported as being responsible for this. These factors can be stratified into investigator-related, patient-related, institution-related and protocol-related factors.

Patient-related factors include: low literacy levels [15], cultural beliefs [16], and mistrust of research and suspicion of experimentation [17]. Institutional factors include: erratic health care utilization [18]. Poor infrastructure and insufficiently rigorous regulation.

Investigator-related barriers which can hinder patient recruitment and retention could be logistic or personnel factors [19]. A common one is the failure to integrate the role as a healthcare giver and investigator, and failure to anticipate the required work load [20]. Other barriers include competing demands with lack of time and resources [21, 22] inadequate experience with trial conduct and poor motivation of investigators. Also noted as an important barrier is gate keeping by Clinical Staff Members who believe they are protecting patients from research procedures they perceive as burdensome or undesirable [22] and skepticism about the usefulness of the research interventions [23].

Protocol-related barriers vary from lengthy trial periods to over burdensome visit schedule requiring a significant degree of change in the participants' routine activities [24] and restrictive eligibility criteria [25].

Physicians are either involved as investigators or refer their patients for recruitment into studies.

Physicians' involvement in the recruitment of subjects into clinical trials is crucial especially in sub-Saharan Africa where the patients tend to rely a lot on their physicians for information about their health. This is due to the large number of illiterate clients. Even the educated patients greatly esteem their doctors' opinion about their health concerns. It may thus be reasonable to infer that the success of clinical trials in sub-Saharan Africa is hinged on the greater awareness of physicians of the concept of clinical trials and their role in subject recruitment.

All the physicians involved in this survey had heard about randomized controlled trials and some (27.4%) were aware of the clinical trial registry- ClinicalTrial.gov. However, majority of the physicians were neither aware of ongoing trials in their specialty anywhere in the world (56.2%) nor of ongoing trials in Ghana (68.5%). Also, only 21.9% of them have had a formal training in randomized controlled trials. This low level of knowledge is reflected in the low participation of physicians in Ghana in clinical trials, with only 27.4% having been involved in the conduct of RCTs before.

All the respondents accepted that clinical trials are beneficial and further scientific knowledge, and this is evident in the willingness of 98.6% of them to refer their patients for recruitment if they are aware of an ongoing trial relevant to their patients' illness. What is obvious though is that physicians in Ghana do not regularly search the trial registry for ongoing trials relevant to their patients. Only 12.3% of respondents had searched for ongoing trials for their patients in the last 3 months even though all the respondents affirmed that regular update on the results of clinical trials can enhance their practice of evidence-based medicine. Only one-third of the physicians had ever referred patients for recruitment into clinical trials. The rest who didn't refer any patient gave reasons ranging from not being aware of any ongoing clinical trials (50.7%) to thinking that their patients don't really need to participate in any clinical trial. A few posited that the trial centres are far from their catchment area making them unwilling to refer their patients, while two respondents stated that they have not had opportunity to make any referral. However, there was no significant difference in the patient referral practices across the cadre.

The lack of adequate awareness of ongoing clinical trials by these physicians is also evident in their inability to discuss issues of clinical trials with their patients. Only 23.3% of respondents acknowledged discussing ongoing trials with their patients. Interestingly, 17.8% did not incorporate results of clinical trials in their clinical practice for no stated reason. This may impact negatively their practice of evidence-based medicine.

It is obvious that the reported barriers to subject recruitment in this study are not different from what is obtained in the literatures reviewed. However, important issues that can impact the conduct of clinical trial like the competence of the regulatory bodies and infrastructural support were not mentioned. This might mean that there are improvements in these aspects in Ghana compared to what obtained in the past or respondents underestimate their importance.

One resident doctor commented in his responses that …' consultants are not eager to help residents learn how to do them or even pull them on board of the ones that they are doing'.

This brings up the issue of mentorship which is paramount in clinical research, including randomized controlled trials. A lot of resident doctors and even some consultants in Ghana are not so enthused by the idea of clinical research because of lack of proper mentorship during their training period. Thus, at the completion of their training, clinical duties take central stage and meaningful research is abandoned or at best relegated to the background. With time the drive to be involved in clinical research wanes. This negatively affects interest in ongoing trials let alone referring patients to such trials.

Proper documentation and record keeping which is foundational for any meaningful research is grossly underplayed in the hospital as noted by some of the respondents, thus gathering data becomes difficult. A situation where patients have to keep their folders at home and come with them at hospital visits, without any backup electronic database in the hospital can only result in the lingering problem of loss of data. This makes basic clinical research difficult including conducting randomized controlled trials.

Another important barrier noted is the fact that there are actually very few trials going on in Ghana cut across a few disease conditions. Even if all the physicians were aware of all the clinical trials, they may not be relevant to a lot of their patients based on their disease condition.

Strategies that may enhance subject recruitment and retention centers on adequate physicians' education on randomized controlled trials, adequate dissemination of information by Contract Research Organizations (CROs) to physicians about ongoing clinical trials and collaboration with them to foster trust that will ensure referral of their patients. There appears to be a communication gap between these two parties. Putting up adverts on their websites as may be obtained in the developed countries may not work well here as internet access is limited and not many patients and even physicians search online for clinical trials adverts.

Public enlightenment campaign on the benefits of clinical trials using the media and community leaders in collaboration with healthcare workers can help allay the fears of the public about clinical research and foster willingness of patients to be referred for recruitment into clinical trials. An example of this public fear of clinical trials was witnessed in the public outcry that heralded the attempt to carry out Ebola vaccine clinical trial in Ghana.

Furthermore, clinical trial thrives on adequate funding. Most institutional randomized controlled trials are poorly funded, mostly paid out of pocket by the principal investigator. Patients are sometimes required to bear the cost of the treatment being investigated in order to lessen the cost burden on the investigator. Provision of research grants can encourage interest in clinical research making more clinical trials available and accessible. Incentives for both the physicians referring the patients and the patient, in a way that will not be considered an inducement, can encourage subject recruitment and retention.

This study's main aim was to determine the physician related factors that influence subject recruitment into randomized controlled trials. An online survey on a section of doctors in Ghana was used. Ethical requirements were met before commencement of study. This study would probably have been more complete if the survey also involved the clinical research organizations who are actually involved in the conduct of these clinical trials to assess if they were having problems with meeting their recruitment targets.

Conclusion

Majority of physicians in Ghana are not aware of ongoing trials in their specialty both in Ghana and elsewhere in the world. Majority of them have not had any training on randomized controlled trials and have not been involved in any clinical trial. Generally, they have the right attitude towards randomized controlled trials and agree that it is beneficial and further scientific knowledge, and this is expressed in their willingness to refer their patients for recruitment. However, only one-third of them have actually referred patients for recruitment. There was no significant difference in the patient referral practices across the cadre of doctors, although there was a trend towards increased recruitment practice with increasing cadre.

Most of them do not regularly search the website for ongoing trials that may be beneficial to their patients. Thus, they don't discuss ongoing trials with their patients. The single most important physician-related barrier to subject recruitment into clinical trial noted in this study is the lack of awareness of the physicians on ongoing clinical trials. Also important is the lack of exposure of these physicians to clinical trial during their training period making it difficult for them to imbibe this practice later in life.

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APPENDIX 1: SURVEY QUESTIONNAIRE

Physicians' knowledge, attitude, practice and perceived barriers to subject recruitment for Randomized Controlled Trials

PARTICIPANT INFORMATION SHEET/CONSENT AND SURVEY

Dear Colleague,

My name is Dr. Ubong Ekpene. I am a senior resident in Neurosurgery at Korle Bu Teaching Hospital and also undergoing an online Master's degree program in Clinical Research at the University of Liverpool, United Kingdom.

You have been invited to participate because as a physician, your opinion is highly valued, and it would be an honor to have your anonymous participation in this valuable research. Please understand that participation is voluntary, but by answering or otherwise responding to the survey, you imply that you willingly consent to completing the survey. None of the questions included should cause anyone to feel uncomfortable. Additionally, I anticipate no risks or inconveniences in completing this survey. However, if you feel threatened by responding, please do not begin or continue to complete the instrument. If you should choose to not participate, you are free to withdraw at anytime without explanation and without incurring a disadvantage. Information from this survey will be used as part of my master's dissertation in clinical research.

Clinical research is the bedrock for the practice of Evidence Based Medicine (EBM) and a well conducted randomized controlled trials (RCT) gives level I evidence. Subject recruitment into RCT remains a challenge worldwide. Institutional, patient, investigator and protocol-related factors contribute to this. This study seeks to explore the investigator-related factors of which the physician forms a part. The aim of the study is to determine the physician-related factors that influence subject recruitment for randomized controlled trials in their sub-specialty in Ghana, and determine strategies that can maximize subject recruitment.

There are 26 numbered items and it should take you about 10-15 minutes to complete the questionnaire. You will be asked questions about your Knowledge and experience in RCT and your honest response is the correct answer. Your responses are completely anonymous and strict confidentiality will be maintained.

In case of any queries or comments regarding the survey's questions, please contact me through phone no +233543202180 or via e-mail at ubongekpene@yahoo.com.

Informed Consent

I have read and understood the information above and I have been offered the opportunity to ask questions. I understand I do not have to accept this invitation and I am free to withdraw at any time without giving reasons. I understand that any data provided will remain confidential and my identity will not be disclosed.

2. Do you wish to to proceed with the survey?

Yes

No

Prev Next

SECTION 1: PERSONAL INFORMATION

3. Date/time

Date / Time: MM/DD/YYYY hh:mm AM/PM

4. Sex

Male

Female

5. Age (Years)

20-30 31-40 41-50 51-60 >60

6. Cadre

Intern Medical officer Resident Snr resident Consultant

7. Speciality

Prev Next

PAGE 4

SECTION 2: KNOWLEDGE

8. Do you know what Randomized Controlled Trial is?

Yes No

9. Do you know about clinicaltrial.gov?

Yes No

10. Do you know of any ongoing clinical trial in your specialty anywhere in the world?

Yes No

If yes can you please mention one?

11. Do you know of any ongoing clinical trial in your specialty in Ghana?

Yes No

If yes can you please mention one?

12. Have you been involved in the conduct of any Randomized Controlled Trials?

Yes No

13. If 'yes' to Q11 as what?

Clinical research associate Study coordinator Principal investigator Co-investigator

Others (please specify)

14. Have you had any training on the conduct of randomized controlled trials?

Yes No

Prev Next

PAGE 5

SECTION 3: ATTITUDE

15. Do you think clinical trials are beneficial and further scientific knowledge?

Yes No

16. Would you refer your patients for recruitment in a clinical trial if you were aware of one?

Yes No

17. If 'No' to Q15 can you please indicate why?

Only if am offered money to do so

My patients don't need it

It will harm my patient

I don’t trust investigators

Other (please specify)

18. Have you searched for any ongoing clinical trial for your patients in the last 3 months?

Yes No

19. Do you think that your regular update on results of clinical trials can enhance your practice of Evidence Based Medicine?

Yes No

Prev Next

PAGE 6

SECTION 4: PRACTICE

20. Have you referred patients for recruitment in clinical trials before?

Yes No

21. If 'No' to Q19 can you please indicate why?

I am not aware of any clinical trial

My patients don’t need it

It will harm my patient

I don’t trust investigators

Other (please specify)

22. Have you reviewed clinicaltrial.gov for ongoing trials in the last 3 months?

Yes No

23. Do you discuss ongoing clinical trials with your patients?

Yes No

24. If 'No' can you please indicate why?

I am not aware of any clinical trial

My patients don’t need it

It will harm my patient

I don’t trust investigators

Other (please specify)

25. Do you incorporate results of randomized controlled trials into your clinical practice?

Yes No

26. What do you think are barriers to subject recruitment into clinical trials in Ghana? Please list below. (Skip this if you have no idea)

27. What strategies can improve subject recruitment and retention in clinical trials in Ghana? (Skip this if you have no idea)

Prev Next

PAGE 7

Thank you for your time

Prev Done

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