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In This Journal

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Introducing Archives of Medicine and Health Review!

It delights me to introduce the maiden edition of Archives of Medicine and Health Review (AMHR), the official journal of the Nigerian Medical Association, Federal Capital Territory, Abuja, Nigeria. At a time when there is already a countless number of medical journals, AMHR hopes to create a métier for itself as a repository of high-quality reports/findings of research works. It aspires to be vibrant, engaging and an accessible avenue for researchers to publish articles on research reports, brief communications and case reports, medical education, reviews and meta-analysis, editorial commentaries, correspondence and article of health or epidemiological relevance in all fields of medicine and human health.

AMHR follows the International Committee of Medical Journal Editors (ICMJE) in the reporting, editing and publication of scholarly work. The decision of the journal to publish an article will not depend on editors' opinion about what is likely to have a substantial impact in a given field, as these subjective judgments can delay the publication of work that later proves to be of major significance to the readership. Articles will be published provided that they are methodologically sound, are of high ethical standards, and conclusions are based on logical interpretations of analyzed research data. The journal allows for a rigorous, qualitative, double-blind peer-review process. It publishes an article online once it is accepted, in a continuous publication pattern, and it also provides a quarterly print (March, June, September, and December) of all the cumulated published articles at these time points. The journal allows for free access (Open Access) to its contents

This first volume and issue cover articles on medical education, review, and original research reports. Needless to say, the journal will appreciate submission of manuscripts from researchers either individually or collaboratively, for the development and success of the journal.
Best wishes and thank you in advance for your contribution to the Archives
of Medicine and Health Review.

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Writing an acceptable journal article

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Abstract

The writing of scientific manuscript for publishing in a medical journal is an art of medicine that is learned, and which also gets better with constant practice. Unfortunately, most medical personnel are bereft of the fundamental knowledge, upon which to build on, as academic writing is rarely taught in most medical schools and/or colleges of post-graduate training. Fortunately, once an author manages to get a manuscript published, he or she is motivated to even publish more articles. This article is a summary of opinions of accomplished authors on the principles of writing an acceptable journal article. The author hopes that readers would find this article useful as a quick guide in their ever busy academic lives.

Keywords: Art, Writing, Acceptable, Manuscript

A.Introduction

After a researcher has conducted a study, he is often faced with the challenge of publicizing the results in a scientific journal. While conducting a research in an institution may be a private matter, publishing the work of a scientific research is not. The content of a published article not only reflects the quality of a good research effort but also the intellectual discernment of the researcher [1]. Although the good content of a manuscript may not guarantee its publication in a good journal, publishing a poorly written manuscript reduces the impact of a good research effort, and often portrays the researcher in a bad light. This concern is even being underplayed as many badly written articles still get published in the so-called predatory journals [3]. Therein lays the problem, as most researchers are not prepared for this task of writing and publishing a research work. Even when researchers have been exposed to hands-on training on academic writing, they soon learn that publishing an article comes with constant practising, learning gradually on the task, and getting better over time [2]. “Any piece of work that is not published is never done” is a common saying, but the increasing number of medical journals available nowadays does not guarantee that a scientific work will be published. “Publish or perish” is an axiom in the academia and it is expected that researchers would strive to publish their research efforts for career advancement and promotion [4]. It is pitiful to see hardworking members of faculties stagnating in their positions because they find it difficult to break the ice of academic writing. Because scientific paper has a required structure and style, it also requires good skills in both structuring and phrasing [4]. Although, there are many available documents on scientific writing and publishing, the ‘Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication’ [5] and the “Writing Tips Series by Kotz and Cals” [6-17] are of particular interest for their succinctness. While it may be difficult to give a straightaway answer to what constitutes a good manuscript that is worthy of publication, most editors and reviewers agree that a good manuscript should be clear, coherent, focused and concise 18]. The purpose of this article is to remind authors about the fundamentals of writing an acceptable article, providing the tips required for authors to satisfy editors, and peer-reviewers of manuscripts of reputable journals.

B.The prerequisite

According to Borja [18], a prospective author needs to answer the following 6 questions in series, before embarking on writing a manuscript for a scientific journal:

1. Why do I want to publish this work? It is good for a researcher to ask himself why a work should be published. A worthy work is the one that is new and which is relevant to a contemporary medical issue. A study is also worthy of being published if the work can provide solutions to some difficult problems.

2. What type of manuscript do I want to write? Manuscripts are generally either one of these three types; full articles/original articles ; letters/rapid communications/short communications; and review papers or perspectives. Often, it is the content and focus of a research work that would determine the type of manuscript that can be written from such work. Full articles/original articles are substantially completed pieces of research that are of an important significance. Letters/rapid communications/short communications are short, usually, serves the purpose of a quick and early communication of significant and original advances in a field. Review papers or perspectives tend to summarize recent developments on a specific hot topic, highlighting important points

that have been reported and introduce no new information. Review papers are normally solicited for, from experts in a particular field, and often by an invitation by a journal.

3. Choose the target journal. It is wise to consult the journal of interest on guidance on instructions to the authors and to also look out for recent issues of the journal. The recent issues of a journal will give a clue as regards the scope of the author's work and if the work is relevant to the topics and the types of articles accepted in the journal. Also, there is the need to consider the rejection rates of the journal as this may be helpful in making an informed decision about the possibility of acceptance by the journal. Local information will probably find more relevance in a local journal!

4. Pay attention to journal requirements in the "Guide for Authors". Once the journal for submission is selected, an author needs to know the "Guide for Authors" of such a journal. A prospective author must pay close attention to the editorial guidelines, submission procedures, and article processing fees, copyright issues and ethical guidelines. Authors must learn to apply the "Guide for Authors" even for the first draft of the manuscript, using the proper text layout, references citation, nomenclature, figures and tables, etc. Most journals also make a provision for a checklist to assist authors in keeping to the guide before a manuscript is submitted.

6. Pay attention to the structure of the paper. Each journal has a structure that is expected to be followed for each type of manuscript. It is expected that an author will keep strictly to the structure stipulated by the particular journal. The information regarding the structure expected of a manuscript is often contained in the journal's "Guide for Authors".

7. Understand publication ethics to avoid violations. It is expected that authors must comply with publication ethics at all times. Authors must avoid plagiarism, data fabrication and falsification, and improper use of human subjects and animals in research. Stealing another author's ideas or wording without proper attribution is also not good.

C.Structure of a manuscript

Often, a manuscript is structured in the form of the **IMRAD** acronym [18, 19] which answers the questions below:

Introduction: What did you/others do? Why did you do it?
Methods: How did you do it?
Results: What did you find?
And
Discussion: What does it all mean?

Over the years, the IMRAD has been expanded to include the prefix "TAA" which stands for Title, Author(s) and Abstract, as well as the suffix "AR" which connotes Acknowledgment and References [19]. Other variations include IRADM with Method at the end, and IMRADC with Conclusion section [19].

Title:

The title of an article is expected to contain the fewest possible words that adequately indicate the contents of the paper [7, 19]. It is specific, does not include abbreviations and should be helpful in literature searching. A good title should avoid redundant words [7, 19]. While some journals also require that an article should contain a particular number of words, some insist that authors should also have a running title, which is a short version of the main title, as this often appears at tops of pages of the article [19].

Abstract:

The abstract summarizes the article. It is widely read and it gives editors and peer reviewers their first impression of the paper. The abstract is also structured like the paper and it is a sort of a mini-IMRAD/C [19]. The Introduction talks about what is known and why the study is needed. The Methods states what is done. The Results lists what is found and the Discussion/Conclusion describes what the result means [7]. The abstract must be consistent with the body of the paper and should be understandable without the paper [7, 19]. It should state the objective of the study and the results section should commence with the answer to the research question [7]. When reports contain percentages it should also contain the sample size as well [7]. Effect sizes should be presented with confidence intervals [7]. It is not expected to include references and tables or figures and should be carefully revised before the paper is submitted [7, 19]. Most journals also expect the abstract to come along with six to eight "Keywords" which are listed immediately below the abstract [19]. The keywords contain the main topics of the article and it is valuable at it contains the main topics of the article. Keywords aid in indexing and searching for the topic of the abstract and as such should not contain terms in the title [19].

Introduction:

The purpose of the introduction is to provide a basic background (what the topic is all about) of the study so that the readers can understand the article [19]. A good introduction enables the readers to appreciate the importance of the research. It talks about relevant previous works on the subject[19]. It identifies the question or questions that the research addresses (gaps in existing knowledge), and it also enumerates the hypothesis or hypotheses that the researchers tested [19]. The introduction may be short or long depending on the field. It is usually long if it contains some literature review [19]. Generally, the length of the introduction is about 10-15% of the article's total word count [8]. In specialized journals, the introduction can be highly technical with the assumption that the readers are an already knowledgeable audience. The introduction is typically funnel-shaped, moving from general to specific [8].

Methods:

The method section when well written enables other researchers to replicate the study so as to evaluate the results of the study and determine whether the conclusions drawn are valid [9, 19]. The method also allows other researchers the capacity to do further research on the topic [9, 19]. The basic information in the method includes an overview of study design, identification of equipment, organisms and reagents used (and their sources), the populations and setting of the study, approval of human or animal research by an appropriate committee, data collection and the statistical methods [9, 19]. Readers may be referred to the details of the method already explained in another article which is part of the same large research project. Method also includes tables and figures and may contain subheadings. The Method is written in past tense [9, 19].

Results:

The result section is the core of the article. It should be logically organized starting from the most important to the least important and should be matched with the method section. It is structured roughly into recruitment/response, sample characteristics, primary analyses, secondary analyses, and ancillary analyses [10]. Estimates should be presented with 95% confidence intervals [10]. The Result often includes tables, figures, or both and should summarize findings from the study. Tables and figures should emphasize important findings rather than providing data in great detail [12]. Each table or figure in the article should be mentioned. Results should be stated but not comment upon (unless there is a combined result and discussion).

The title of the table or figure should reflect what is shown, and the tables/figures should be self-explanatory [12]. Tables/figures should be designed in a way to make them clear and easy to read [12]. The result should be written in past tense.

Discussion:

The discussion section should begin with a brief summary of the main findings and should answer the question(s) stated in the introduction (or address the hypothesis or hypotheses stated in the introduction [19]. It should highlight the strengths of the study (i.e., superior methods, extensive data, e.t.c) [19]. A good discussion also contains the limitations of the study (small sample size, short follow-up, incomplete data, possible sources of bias, problems with experimental procedures, e.t.c.) as it is better for the author to state the limitations than for peer reviewers and readers to think that author is unaware of them [19]. The author should also mention if the limitations will not affect the conclusions of the study [19]. The discussion section should compare the relationship of the study's findings to those of other research describing similarities to previous findings/studies, differences from previous findings, and the possible reasons for similarities and differences [11, 19]. This section also contains the applications and implications of the findings of the study in terms of applicability in medical care and public health [19]. The author(s) can also describe the relationship of findings to theories or models, whether or not the findings support or refute them and may even offer modifications. This section should also suggest if further research is needed to address questions still unanswered and/or address new questions raised by the findings. In general, discussion moves from specific to general, rather like an inverted funnel (opposite of introduction) [11, 19].

Conclusion:

This section may come as part of the discussion or may be separated in some journals. It reinforces the main findings of the work and seeks to answer the research questions and hypothesis [19]. While it makes a practical recommendation based on the validity of the tested data accruing from the study, generalization must, however, be avoided [19].

Acknowledgement:

Some journals are structured to contain the acknowledgement section. In this section, authors are expected to recognize people who contribute to the work in one way or the other but who did not meet authorship criteria. Authors must also see to it that anyone mentioned in the acknowledgement agrees to be so named. This section also contains the list of any supporting grants and institutions.

References:

The purposes of references include giving credit to others for their work, adding credibility to the author's work by showing possession of valid information sources, demonstrating that the work is related to previous work and helping readers to find further information [19]. It is important that references are accurate and authors should accurately state what the cited material says. Articles that are not read should not be cited. It is the author's duty to ensure that all information in the citation is correct in terms of author(s) list, article title, journal title, volume, year and pages. Citation of references should also follow the styles that are peculiar to the journal for each type of reference from a published article, textbooks, websites, etc. Authors should use their own words to describe facts derived from references and copying and pasting should be discouraged [13]. If there is a challenge of selecting references out of many options, then preference should be given to reference that has a good level of evidence, open-access, recent year of publication and those published in target journal [13]. Authors can also make use of referencing soft wares including EndNote, Reference Manager, RefWorks and Zotero [18]. Carefully check for 100% compliance with journal's style of referencing and avoid needless mistakes [13].

D.Other issues involved:

Determining authorship:

This often may be a cause for disputes and in some cases, legal litigation if not well handled. Authorship, including lead authorship, must, therefore, be determined at the formative stage of any manuscript. To qualify for authorship [14], authors should have :(1) Contributed substantially to the conception and design, acquisition of data, or analysis and interpretation of data; (2) contributed to writing the paper or revising it critically for important intellectual content; and (3) given final approval of the version to be published.

The lead author should also engage other co-authors in the response to queries raised by the reviewers and the editors. Co-authors should also meticulously check their names, initials, and affiliations for correctness before the submission of the manuscript.

Cover letter:

Some journals request authors to submit a cover letter together with an initial manuscript at the submission stage. Often, the journals will enumerate what is expected to be contained in the cover letter. A good cover letter will contain the type of article (original article, letters), identifies the submitted work by its title and authors) and explain the importance of the work in its field. It will put the manuscript in proper context as to whether part or whole of it has been presented at a conference or has been partly published. A cover letter may also recommend reviewers and exclude certain potential reviewers and should explain the suitability of the manuscript in the targeted journal.

Submitting the article:

It is important to read the manuscript over and over again before submitting the manuscript [16]. Author should check if the journal has a checklist for submission and adhere closely to it. The steps stipulated by the journal's online submission system should be adhered to. Acknowledgement of receipt of the manuscript and a close monitoring of the manuscript are important and should be the responsibility of the submitting author [16]. There is always an opportunity to seek an audience with the editor if one thinks that there is a delay in the review process.

Responding to reviewers:

Often times, authors are requested to respond to queries raised by the reviewers. This should be viewed as a good sign, and a step towards the acceptance of the manuscript. Authors should not be disappointed as the best article is the one whose manuscript has been thoroughly critiqued. Authors eventually find out that responses to the queries raised by the editors and reviewers eventually add to the quality of the manuscript in contents and in focus. Authors will do well to provide a point-by-point response to all the reviewers' comments [17]. Responses should be structured as author's response to the reviewer's, and also track the changes to the paper with a marked revision at the appropriate places in the manuscript [17]. In a case of rejection, authors would quickly improve on the manuscript based on the reviewers' comments and resubmit the new version to a different journal.

The lead author must involve other co-authors at revision and should also get their approval for re-submissions [17].

E.Conclusion

In conclusion, like other art of medicine, writing and publishing an academic manuscript gets better with constant practice, hard work, and perseverance. The first step is to get one manuscript published. Soon, the urge to publish more articles becomes addictive. A beginner author will soon become an editor of a reputable journal. This article has made the attempt to guide academic writers in what it takes to write an acceptable journal article. There is much information available on how to write an acceptable journal's manuscript [1-19]. Readers will always find this information useful to guide them in this art of academic writing.

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Profile of Bacterial Pathogens and Antibiotic Susceptibility of Ear Infection in National Hospital Abuja, Nigeria

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AN designed the study, extracted the data, analysed the data and wrote the manuscript. IKC participated in the design and acquisition of data, and critically revised and edited the manuscript.

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ABSTRACT

Background: Ear infection is a common problem in children and adults globally. It can lead to the development of hearing impairment with attendant consequences on learning, communication and social life. Life-threatening complications such as meningitis, brain abscess and even, ear tumour, can result from the untreated or poorly treated ear infection.

Aim: To determine the bacteriologic profile and antimicrobial susceptibility pattern of ear infection from patients seen at National Hospital Abuja (NHA).

Methods: This is a retrospective study conducted at NHA. Laboratory data of processed ear swab samples of patients who were clinically diagnosed of having an ear infection at NHA were extracted, reviewed and analyzed from February 2015-December 2016.

Results: Out of a total of 195 ear swab samples of patients analysed within the study period, 157 grew bacterial pathogens giving an infection prevalence of 80.5%. The prevalence of ear infection was higher in males (57.1%) than females. The highest cases of ear infection (64.3%) were found in children aged 10 years and below. Of the patients who had the ear infection, 150 (95.5%) had a single bacterial infection, while 7(4.5%) had mixed infection. Of the total of 170 bacterial pathogens isolated, 97 (57.1%) were gram-negative bacteria. Staphylococcus aureus was the most predominant isolates, followed by Pseudomonas aeruginosa, Proteus spp, Klebsiella pneumonia, and Escherichia coli. The predominant bacterial pathogens were generally highly susceptible to ciprofloxacin, imipenem, meropenem, amikacin and gentamycin. Staphylococcus aureus was particularly susceptible to aminoglycosides, ampicillin-sulbactam, ceftazidime, carbapenems, ciprofloxacin and chloramphenicol.

Conclusion: The prevalence of ear infection was very high in this study. The susceptibility spectrum of Staphylococcus aureus, the most common cause of ear infection in this study offers hope of successful treatment in our setting. Concerted efforts in instituting good antibiotics prescription and for a regular monitoring of antibiotics susceptibility pattern are essential in preventing the emergence of multidrug-resistant organisms.

Key Words: Profile, Bacterial Pathogens, Ear Infection, National Hospital, Abuja

INTRODUCTION

Ear Infection is an inflammation of the ear and one of its commonest symptoms is ear discharge. It is a common reason for a hospital visit, and for a need for antibiotics [1]. Ear infection is a common problem for both children and adults [2]. Although it can be caused by viruses and fungi, the majority of cases are caused by bacteria [2,3,4]. About 65-330 million people suffer from ear infection globally and significant hearing impairment develops in 60% of this population [2]. In addition, it can lead to the development of complications such as meningitis, brain abscess, tumour in the middle ear, post aural swelling and aural sinus complications [5]. The health and economic burden of ear infection are also huge especially in Africa and other developing nations where the disease prevalence has been estimated to be as high as 11% [6]. The type, frequency and antimicrobial resistance pattern of bacterial etiologic agents from ear infection vary among populations due to variability in geography, local antimicrobial prescribing practices and prevalence of resistant bacterial strains [5, 7, 8]. Various studies have identified Pseudomonas aeruginosa (P. aeruginosa), Staphylococcus aureus (S. aureus), Proteus mirabilis (P. mirabilis), Klebsiella pneumonia (K. pneumonia), and Escherichia coli (E.coli) as the commonly isolated organisms from cases of ear infection [5, 9, 10, 11, 12]. In Abuja, there is a dearth of data on bacterial causes of ear infection and their antimicrobial susceptibility pattern. This study is aimed at closing this information gap.

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MATERIALS AND METHODS

This was a laboratory-based descriptive study conducted between February 2015 and December 2016 at the Medical Microbiology Laboratory of National Hospital, Abuja, Nigeria. The laboratory records of patients' ear samples processed within the study period were extracted, reviewed and analyzed. In our laboratory, ear swab samples aseptically collected from patients with various ear infections are directly inoculated on Blood, Chocolate and MacConkey agar plates without delay. The blood agar and McConkey agar plates are incubated at 35-37°C for 24 hours aerobically, while the chocolate plates are incubated at 35-37°C for 24 hours under 5% CO2 in a candle jar. All bacterial isolates are identified using standard bacteriological methods [13,14]. Antibiotic susceptibility testing is carried out on the isolates using the Kirby Bauer method and in accordance with the recommendations of the Clinical and Laboratory Standards Institute for disc diffusion tests [15].

RESULT

Out of 195 patients' ear swab samples processed within the study period, 157 (80.5%) yielded bacterial growth. Ninety-seven (61.8%) of the patients who had bacterial ear infection were males, while 60 (38.2%) were females (Table 1). One hundred and one (64.3%) of the individuals with ear infection were in the age group 0-10 years, 11 (7.0%) in the age group 11-20 years, and 11 (7.0%) in the age group 21-30 years (Table 1). Of the 157 individuals who had an ear infection, 150 (95.5%) had single bacterial infections, while 7 (4.5%) had mixed bacterial infections (Table 1).

A total of 170 (87.2%) bacterial isolates were obtained from the 195 processed ear swab samples. Ninety-seven (57.1%) of the bacterial isolates were Gram-negative bacteria, while 73 (42.9%) were Gram-positive bacteria. Sixty-nine (40.6%) of the bacterial isolates were S. aureus, 61 (35.9%) P. aeruginosa, 13 (7.7%) proteus spp, 11 (6.5%) K. pneumonia, 5 (2.9%) E. coli, and 11 (6.4%) were others (Table 2).

The sensitivity of meropenem and ampicillin/sulbactam to S. aureus was 100% respectively, while amikacin was 91.9%, imipenem 91.7%, ciprofloxacin 78.4%, gentamycin 78%, and chloramphenicol 73.3% (Table 3). The sensitivity of imipenem to P. aeruginosa was 100%, while gentamycin was 88.4%, ciprofloxacin 86.4%, meropenem 78.4%, and amikacin 73.0% (Table 3). For Proteus spp, meropenem was 100% sensitive, imipenem 87.5%, ciprofloxacin 81.8%, and amikacin 66.7% (Table 3). All the K. pneumoniae isolates were susceptible (100%) to meropenem and imipenem, while susceptible to amikacin and ciprofloxacin were 85.7% and 50% respectively (Table 3). Also, all the E. coli isolates were susceptible (100%) to ciprofloxacin, gentamycin, amikacin, and meropenem, while 75% of the isolates were susceptible to chloramphenicol (Table 3). In addition, Providentia spp was 100% sensitive to ciprofloxacin, imipenem, amikacin, meropenem and ceftazidime, while it was 50% susceptible to chloramphenicol or ampicillin-sulbactam (Table 3).

Furthermore, the susceptibility of Enterococcus spp was 100% to ciprofloxacin, amikacin, gentamycin and augmentin (Not shown). The sensitivity of the various tested antibiotics to Morganella morgani (M. morgani) was as follows: amikacin (100%), imipenem (100%), ceftazidime (50%), gentamycin (50%), ciprofloxacin (0%), ceftriaxone (0%), augmentin (0%), chloramphenicol (0%) (Not shown). Citrobacter freundii (C. freundii) was 100% susceptible to ciprofloxacin, ceftazidime and chloramphenicol respectively, but was 50% susceptible to amikacin, none was sensitive to gentamycin or ceftriaxone (Not shown). With the exception of clindamycin and ciprofloxacin which recorded sensitivity of 0% to Streptococcus spp, 100% sensitivity was recorded for augmentin, gentamycin and chloramphenicol (Not shown). The sensitivity of the antibiotics tested against Coagulase -Negative Staphylococcus showed 100% to gentamycin, 100% to cefuroxime and 0% to either azithromycin or chloramphenicol (Not shown).

Table 1.
Distribution of Ear Infection by Age, Gender and Nature of Infection

Age (years)	No. (%)
0-10	101 (64.3)
11-20	11 (7.0)
21-30	11 (7.0)
31-40	8 (5.1)
41-50	4 (2.6)
51-60	2 (1.3)
≥61	2 (1.3)
Unspecified	18 (11.4)
Total	**157 (100)**
Gender	**No.(%)**
Male	97 (57.1)
Female	60 (42.9)
Total	**157 (100)**
Nature of Infection	**No. (%)**
Single Bacterial Aetiology	150 (95.5)
Mixed Bacterial Aetiology	7 (4.5)
Total	**157 (100)**

No.= Number of cases of Ear infection, %=percentage of cases of Ear infection

Table 2.
Frequency of Isolates from ear infection

Isolates	No. (%)
S. aureus	69 (40.6)
P. aeruginosa	61 (35.9)
Proteus spp	13 (7.7)
K. pneumoniae	11 (6.5)
E. coli	5 (2.9)
Providentia spp	3 (1.8)
Enterococcus spp	2 (1.2)
C. freundii	2 (1.2)
M. morgani	2 (1.2)
Streptococcus spp	1 (0.5)
CNS	1 (0.5)
Total	170 (100)

No.= Number isolates, %=percentage of isolates, CNS=Coagulase Negative Staphylococci

Table 3.
Antibiotic Susceptibility Pattern of the predominant Isolates of Ear Infection

Antibiotics	Isolates											
	S. aureus		P. aeruginosa		Proteus spp		K. pneumoniae		E. coli		Providentia spp	
	T	%S	T	%S	T	%S	T	%S	T	%S	T	%S
Gentamycin	50	78.0	43	88.4	9	55.5	8	50.0	2	100	-	-
Azithromycin	16	50.0	-	-	-	-	-	-	-	-	-	-
Ciprofloxacin	37	78.4	59	86.4	11	81.8	10	50.0	2	100	1	100
Amikacin	37	91.9	37	73.0	9	66.7	7	85.7	1	100	1	100
Cefuroxime	42	57.1	-	-	3	33.3	3	33.3	1	0.0	-	-
Chloramphenic	30	73.3	31	3.2	6	16.7	8	37.5	4	75.0	2	50.0
Ceftriazone	19	52.6	10	60.0	5	20.0	3	33.3	-	-	-	-
Augmentin	46	69.6	30	3.3	8	37.5	6	16.7	2	0.0	-	-

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Imipenem	12	91.7	5	0.0	8	87.5	9	100	-	-	1	100
Amp-Sulb	4	100	3	33.3	2	50.0	-	-	-	-	2	50.0
Meropenem	4	100	14	78.6	3	100	2	100	2	100	1	100
Ceftazidime	1	100	52	67.3	7	28.6	5	40.0	4	50.0	1	100
Clindamycin	55	67.3	-	-	-	-	-	-	-	-	-	-
Erythromycin	31	32.3	-	-	-	-	-	-	-	-	-	-

Chloramphenic: Chloramphenicol, Amp-Sulb: Ampicillin-Sulbactam

DISCUSSION

The prevalence of ear infection in this study was 80.5%. This agrees with the findings in previous studies [16, 17].

Furthermore, Gram-negative bacteria were also the dominant (57.1) isolates of ear infection, compared to the Gram-positive bacteria. This finding is also similar to findings in other studies [2, 4, 10, 12].

Single bacterial infection of the ear was seen in the majority (95.5%) of our patients. This observation was supported by other researchers elsewhere [5, 9,12].That ear infection was more common in males (61.8%) than females in this study corroborates the reports from previous studies [2, 12]. This is, however, in contrast with the reports of female preponderance in some studies [4, 9, 10, 18, 19] or no significant difference between males and females with ear infections in others [20, 21]. The observed variations in this study and those of others may be due to differences in ear cleaning habits of the different populations studied.

Children in the age group of 0-10 years accounted for the highest number of patients with an ear infection (64.3%). This finding has been documented in previous studies [2,4,12,22]. The shorter, wider and horizontal posturing of the Eustachian tubes in children, together with their propensity to develop frequent upper respiratory tract infections would explain why ear infections are common in this age group [23].

S. aureus was the most predominant (40.6%) isolate, followed by P. aeruginosa (35.9%), Proteus spp (7.7%), K. pneumonia (6.5%), and E. coli (2.9%). These findings agree with those of other studies where S. aureus was the commonest isolate, followed also by P. aeruginosa [21, 24-26]. In contrast, however, in studies done in Ibadan, Abeokuta and Jos, the most predominant isolated bacterial pathogen was P. aeruginosa, followed by S. aureus and Proteus spp [10,12,27]. The effect of climate and geography have been put forward to explain the variability in bacterial isolates in different settings [7].

The predominant bacterial isolates in this study were generally highly susceptible to imipenem, meropenem, amikacin, gentamycin and ciprofloxacin. The high level of susceptibility of S. aureus to amikacin and gentamycin in this study has also been previously documented [26]. P. aeruginosa was found to be highly sensitive to amikacin, ciprofloxacin, gentamycin and ceftazidime, a finding similar to what was reported in a study in Ibadan [12].

In this study, the resistance observed to the more commonly prescribed antibiotics in this environment (including chloramphenicol, cefuroxime, ceftriaxone, augmentin and erythromycin) by most of the predominant isolates may be explained by the inappropriate and indiscriminate abuse of these antibiotics, which made it possible for resistance to emerge.

CONCLUSION

S. aureus was the commonest isolated bacterial pathogen, followed by P. aeruginosa, Proteus spp, K. pneumonia and E. coli. These common bacterial isolates were also highly susceptible to ciprofloxacin, imipenem, meropenem, amikacin and gentamycin. The favourable susceptibility of these bacteria to commonly prescribed antibiotics in this setting offers hope in the successful treatment of ear infection. Despite this, there is a need to institutionalized antimicrobial stewardship programs, and periodic monitoring of trends in antimicrobial resistance. These efforts should prevent the emergence of multidrug-resistant bacteria that are capable of complicating an otherwise simple infection.

We, however, recognised that this study, being retrospective in designy was limited by some missing clinical details about the studied population.

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Microbiological Profile of Pharyngotonsilitis in National Hospital, Abuja, Nigeria

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AN designed the study, extracted the data, analyzed the data and wrote the manuscript. IKC participated in the design and acquisition of data, and critically revised and edited the manuscript.

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Background: Pharyngotonsillitis is a common reason for consultations with the paediatrician and family physician. Although, a predominant problem of children, people of all age groups can be affected. Appropriate treatment depends on the knowledge of the bacterial aetiologies, and the susceptibility pattern in a locality to the commonly prescribed antimicrobials.

Aim: To determine the bacteriologic profile and antimicrobial susceptibility pattern of pharyngotonsillitis in patients seen at the National Hospital Abuja (NHA).

Methods: This was a retrospective review and analysis of the laboratory data of processed throat swab samples of patients with a suspected throat infection at NHA Abuja from February 2015 to December 2016.

Result: Out of a total of 297 throat swab samples of patients analysed within the period studied, 45 grew bacterial pathogens giving an infection prevalence of 15.2%. The prevalence of pharyngotonsillitis was not essentially different in males (51.1%) and females (48.9%). Age group 0-6 years had the highest number of cases of pharyngotonsillitis 28 (62.2%). Staphylococcus aureus (S. aureus) was the most predominant isolates (44.4%), followed by Klebsiella pneumoniae (15.5%), streptococci species other than Streptococcus pyogenes (9.0%) and Streptococcus pyogenes (4.4%). These predominant bacterial pathogens were generally highly susceptible to amikacin, imipenem and ciprofloxacin, while S. aureus, in addition, was highly susceptible to azithromycin, gentamycin augmentin and erythromycin.

Conclusion: There was low prevalence of pharyngotonsillitis. S. aureus was the most common cause of this condition. Imipenem, amikacin, azithromycin, ciprofloxacin and gentamycin represent an excellent choice for the treatment of pharyngotonsillitis in this environment. Regular surveillance for the aetiologic agents of this infection, as well as their susceptibility profile to antimicrobials, are recommended for appropriate management of this condition.

Key Words: Microbiological, Profile, Pharyngotonsillitis, Abuja, Nigeria

INTRODUCTION

Pharyngotonsillitis is one of the most common infections encountered by paediatricians and family physician [1-4]. This infection occurs predominantly in school-aged children, but patients of any age may be affected [5]. Although most cases of pharyngotonsillitis are viral in origin, bacterial pathogens, however, are implicated in the aetiology of approximately 30% to 40% of this infection [6]. Although most literature has documented Streptococcus pyogenes (S. pyogenes) as the most common bacterial cause of pharyngotonsillitis with its important attendant sequelae of rheumatic fever and rheumatic heart disease [7-10]; studies revealing Staphylococcus aureus (S. aureus) as the leading bacterial etiologic agent of this infection is also on the increase [11-13]. Therefore, knowledge of the bacterial profile of this infection and their antibiotic susceptibility pattern in any environment is essential in the choice of appropriate antimicrobial therapy for this condition. The primary objective of this study was to determine the bacteriological profile and antibiotic sensitivity pattern of patients with acute pharyngotonsillitis in National Hospital, Abuja (NHA).

MATERIALS AND METHOD

This was a retrospective study conducted at the NHA, a 200-bed tertiary health facility located in Federal Capital Territory (FCT) of Nigeria. It serves the FCT residents and patients referred from other parts of the country. It has well-equipped wards and outpatient departments for various clinical specialties. Data of processed throat swab samples of patients with clinical diagnosis of pharyngotonsillitis from February 2015 to December 2016 were extracted from medical microbiology laboratory record book and evaluated. In our facility, throat swab samples received at the medical microbiology laboratory of NHA are usually inoculated directly onto blood agar, chocolate agar, and MacConkey agar plates respectively without delay. Chocolate agar plates are incubated at 37°C for 24 hours under 5-10% CO2 in a candle jar, while blood agar and MacConkey agar plates are incubated at 37°C for 24 hours under aerobic condition. Isolates recovered are identified using standard bacteriological methods [14, 15]. The isolates are subsequently subjected to antimicrobial susceptibility testing using the modified Kirby-Bauer technique and results interpreted according to the Clinical Laboratory Standard Institute guideline [16].

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RESULTS

A total of 297 throat swab samples were received and processed within the period under review out of which 45 (15.2%) were culture positive. Twenty-three (51.1%) of these patients were males, while 48.9% were females (Table 1). Twenty-eight (62.2%) of these patients were aged 0-6 years, 3 (6.7%) 7-13 years, 1(2.2%) 14-20 years, and 13 (28.9%) ≥ 21 years (Table 1). Twenty (44.4%) of the isolated bacteria were S. aureus, 7 (15.5%) Klebsiella pneumonia (K. pneumoniae), 6 (13.3%) streptococci species other than S. pyogenes, 4 (9.0%) S. pyogenes, 2 (4.4%) Escherichia coli (E. coli), and 2 (4.4%) others (Table 2).

S. aureus was 100% sensitive to imipenem, 90% to amikacin, 87.5% to azithromycin, 71.4% to ciprofloxacin, 70.0% to gentamycin, 66.7% to erythromycin, and 60.0% to augmentin (Table 3). K. pneumonia was 100% sensitive to imipenem, meropenem, amikacin, ceftriaxone and ceftazidime respectively, but 71.4% sensitive to ciprofloxacin (Table 3).

Streptococci species other than S. pyogenes were 100% susceptible to ciprofloxacin and levofloxacin respectively, but 60.0% to cefuroxime and augmentin respectively (Table 3).

S. pyogenes was 100% sensitive to imipenem, augmentin, cefuroxime and clindamycin, but was 66.7% sensitive to either ciprofloxacin or erythromycin (Table 3).

The sensitivity results of the other bacterial isolates are as shown in Table 3.

Table 1. Gender and Age distribution of Pharyngotonsillitis.

Gender	**No (%)**
Male	23 (51.1)
Female	22 (48.9)
Total 45 (100)	
Age (years)	**No (%)**
0-6	28 (66.2)
7-13	3 (6.7)
14-20	1 (2.2)
≥21	13 (28.9)
Total 45 (100)	

No.= Number of cases of pharyngotosillitis, %=percentage of cases of pharyngotonsillitis

Table 2. Frequency of Isolates from Pharyngotonsillitis

Isolates	**No (%)**
S. aureus	20 (44.4)
K. pneumoniae	7 (15.5)
Streptococci spp	6 (13.3)
S. pyogenes	4 (9.0)
Enterococcus spp	4 (9.0)
E. coli	2 (4.4)
P. aeruginosa	1 (2.2)
Providentia	1 (2.2)
Total 45 (100)	

No.= Number of isolates, %=percentage of isolates

Antibiotics	**S.a**	**K.p**	**Strep spp**	**S. p**	**Enter Spp**	**E.c**	**P.a**	**Provid Spp**
	N(%S)	**N(%S)**	**N(%S)**	**N(%S)**	**N%S)**	**N(%S)**	**N(%S)**	**N%S)**
Ciprofloxacin	7(71.4)	7(71.4)	2(100)	3(66.7)	2(100)	2(50.0)	1(100)	1(0)
Augmentin	15(60.0)	3(0)	5(60.0)	3(100)	3(100)	2(100)	–	1(0)
Gentamyin	14(70.0)	3(33.3)	–	2(50.0)	–	1(0)	1(0)	1(0)
Cefuroxime	11(36.4)	6(33.3)	5(60.0)	3(100)	2(50.0)	2(50.0)	–	–
Amikacin	10(90.0)	6(100)	–	–	2(0)	2(50.0)	1(100)	1(100)
Azithromycin	8(87.5)	1(0)	4(25.0)	–	–	–	–	–
Erythromycin	9(66.7)	–	2(0)	3(66.7)	3(66.7)	–	–	–
Imipenem	4(100)	2(100)	–	1(100)	–	1(100)	1(100)	1(100)
Meropenem	–	5(100)	–	–	–	–	–	–
Clindamycin	15(40.0)	–	4(25.0)	2(100)	3(0)	–	–	–
Ceftriazone	6(50.0)	2(100)	–	–	2(100)	–	1(100)	–
Ceftazidime	–	2(100)	–	–	–	–	–	–
Levofloxacin	2(50.0)	–	3(100)	–	–	–	–	–
Amp-Sulb	1(100)	1(0)	–	–	1(0)	–	–	–

S.a= S. aureus, K.p= K. pneumonia, Strep spp= Streptococci species, S.p=S. pyogenes, Enter spp= Enterococcus spp, E.c=E. coli, P.a= P. aeruginosa, Provid spp: Providentia spp

DISCUSSION

The prevalence of bacterial pharyngotonsillitis in this study was 15.2%. This prevalence is low when compared with earlier studies that recorded the prevalence rates of 53.42% – 72.0% [8,12,17,18]. We suspect that prior use of antibiotics and possible viral etiologic agents might be responsible for the low yield of throat culture in this study.

There was essentially no difference between the prevalence of pharyngotonsillitis in males (51.1%) and females (48.9%). The reason for this is unclear.

The highest percentage of pharyngotonsillitis was caused by S. aureus (44.4%). This finding is in agreement with those of previous studies [11-13, 19]. That K. pneumonia was the next most common aetiologic agent of pharyngotonsillitis in this study was also reported in a previous study [18]. However, S. pyogenes, the fourth commonest cause of pharyngotonsillitis in this study, has been reported as the commonest cause of this infection in several previous studies [7-10]. The highest number of cases of pharyngotonsillitis was found in children aged 0-6 years which also agrees with the findings of other researchers [18, 20], possibly because of immatured immune system in this age group.

S. aureus was highly sensitive to imipenem (100%), amikacin (90%),

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azithromycin (87.5%), ciprofloxacin (71.4%) and gentamycin (70.0%), but was of moderately sensitivity to erythromycin (66.7%) and augmentin (60.0%).
S. pneumoniae was found to be highly susceptibility to imipenem (100%), meropenem (100%), amikacin (100%), ceftriaxone (100%), ceftazidime (100%) and ciprofloxacin (71.4%).

Streptococci species other than S. pyogenes were highly sensitive to ciprofloxacin (100%), levofloxacin (100%), but of moderate sensitivity to cefuroxime (60.0%) and augmentin (60.0%).

Excellently high susceptibility was displayed by S. pyogenes against imipenem, augmentin, cefuroxime and clindamycin, while its susceptibility to erythromycin and ciprofloxacin was moderately high. Other researchers have also documented similar high sensitivity to these common antimicrobials [8, 12].

CONCLUSION:

S. aureus was the most common aetiologic agent of pharyngotonsillitis in our setting. Furthermore, aminoglycosides, imipenem, azithromycin, ciprofloxacin, erythromycin and augmentin represent a good choice for empirical treatment of pharyngotonsillitis.

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Emerging Long-Term Risks of Living Kidney Donation and Its Implications for Living Donor Work up in Nigeria

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Abstract: Kidney transplantation remains the best renal replacement option and living kidney donation is increasingly being performed. However, there are emerging data suggesting that there are risks associated with kidney donation. There is need to reappraise existing donor work up guidelines to align with present realities. Most centres in developing countries like Nigeria rely on protocols from transplant centres in developed countries. There is need to suggest a draft protocol for living donor work up for Nigerians in line with the realities of our environment.

Introduction

Living donor kidney transplantation (LDKT) is increasingly being performed in many centres as it provides better clinical outcomes than deceased donor kidney transplantation (DDKT) [1, 2]. It also provides timely access to kidneys and invariably reduces complications arising from time spent on the waiting list [3]. The first living kidney donor recorded in the literature was a 23year old twin who donated a kidney to his identical twin brother in 1954 [4]. He lived with a solitary kidney for another 56years and died at the age of 79 years [4]. There have since been reassuring data about the safety of living kidney donation (LKD). However, two papers published in 2014 from America and Norway raised concerns about emerging risks of LKD [5, 6].

Interestingly, there are guidelines designed to ensure fairness as well as protect the interest of donors. Kidney disease improving global outcome (KDIGO) summarized these guidelines and the third edition of joint British Transplant Society/Renal Association guidelines for LKD was published in May 2011 [7]. They are collective expert opinions which have no force of the law. For this reason, the strength of the evidence and recommendations are graded. The quality of evidence is graded as one of A, B, C and D which represent high, moderate, low and very low respectively. Also, the weight of recommendation is 1, 2 and 3, which represent 'we recommend', 'we suggest' and 'not strong enough to be graded' respectively. Despite all these activities about LDKT, little or nothing is known about the protocol being used in emerging transplant centres for donor work up. Also, there is the paucity of reports about donor long-term outcomes from emerging transplant communities like Nigeria. There is a heavy reliance on data and protocol from transplant centres in developed countries. This is not best practice when one considers the fact that there are significant disparities in geographical, socio-economic and age-related factors even within these countries [2]. There is need to identify and document long-term complications in emerging kidney transplant communities. Also, there is a need for a donor work up protocol that will take into consideration the peculiarities of Nigerians. Bamgboye in 2009 identified and reported factors that serve as barriers and the peculiarities of kidney transplantation in Nigeria. These include a low level of education, poverty, the absence of functional dialysis and transplant units, lack of appropriate health policies as well as inadequate and poorly motivated caregivers [8]. Similarly, Arogundade in 2011 described kidney transplant outcomes in Nigeria between 2000 and 2010. One- year graft and patient survival was 83.2% and 90.2% respectively while the 5-year graft and patient survival was 58.7% and 73.4% respectively [9]. Also, Adekoya and colleagues in 2012 reported that Nigerians were willing to donate a kidney [10]. However, there is no report on donor outcome in Nigeria.

This review is aimed at critically appraising relevant literature and producing a draft protocol for donor work up that will take into consideration the peculiarities of the transplant environment in Nigeria.

Discussion

Living kidney donation has recently been reported to be associated with increased long-

term risk of end-stage renal disease [5, 6, 11], cardiovascular disease [12] as well as all-cause mortality. Similarly, donors have been reported to have increased risk of gestational hypertension [13] and pre-eclampsia in pregnancy [13]. All these support the need for a local protocol for donor work up.

British Transplant Society (BTS) guidelines (2011) on pre-donation glomerular filtration rate (GFR) for living kidney donors

The recommendation is that pre-donation GFR should be measured using a reference procedure e.g. 51cr EDTA. A prospective donor whose corrected GFR is predicted to fall below a satisfactory level of kidney function within his or her lifespan should not be considered for donation. The acceptable minimum standard is a predicted GFR of 37.5ml/min/1.73m2 by 80years of age (grade B1). There is, however, no evidence that serves as a guide for an acceptable level of kidney function after 60 years of age.

The guidelines also recommend that estimated glomerular filtration rate (eGFR) should not be used to predict the risk of ESRD in a living donor (grade B1). Also, BTS guideline considers a LKD with normal pre-donation GFR not to be at greater risk of ESRD than individuals in the general population. This section of the guideline needs to be interpreted with caution as some emerging data published after its release in May 2011 are suggesting otherwise. Prospective donors in Nigeria presently have pre-donation kidney function assessed using creatinine clearance and eGFR.

Long term risk of end stage renal disease following Kidney donation

Previous reports of estimated kidney function following kidney donation suggested that donors had lower or no difference in long-term risk of end-stage renal disease when compared with individuals who were otherwise well enough to donate a kidney [14]. However, this has been attributed to the fact that donors were thoroughly screened and would invariably be healthier than matched healthy non-donors [14-16]. Conversely, there are recent studies where issues relating to matching in control recruitments were addressed and these studies reported a significant increased long-term risk of ESRD in LKD when compared with healthy controls [5, 6].

MjØen et al in 2013 reported 1901 LKD from a single centre between 1963-2007. They excluded 41 donors with eGFR less than 70ml/min/1.73m2 and 89 older donors (age > 70 years). They also excluded those with hypertension or on antihypertensive medication (n=106) as well as those with body mass index (BMI) > 30kg/m2 (n=125). The mean eGFR before donation was 105ml/min/1.73m2. The control group comprised 32621 healthy individuals selected from a population-based survey [Health study of Nord-TrØndelag (HUNT)]. LKD were followed up for a median duration of 15.1 years (1.5-43.9) years. They reported that 9 (0.47%) LKD developed ESRD 18.7 (10.3-24.3) years after donating a kidney. This was significantly higher than 22 (0.07%) healthy controls that progressed to ESRD [5]. In addition, they reported that all 9 LKD who later had ESRD were biologically related to the recipients and that immunological renal disease was the primary cause of ESRD in these LKD. This suggests the possibility of a hereditary factor in ESRD in LKD following transplantation [17]. Although, there was no report on the cause of ESRD in the LKD from this Norwegian study.

Similarly, Muzaale et al in 2014 related their experience from a study conducted in the United State of America (USA). They reported on 96217 LKD who had donor nephrectomy between 1994 and 2011. The median follow up period in that study was 7.6years. The maximum follow up period was 15years and the mean eGFR at donation was 101ml/min/1.73m2. They selected controls from the third National Health and Nutrition Examination Survey (NHANES III) that were enrolled between 1988 and 1994. They excluded 10660 individuals remaining 9364 healthy controls, 36 (0.04%) developed ESRD. This was significantly less than the 99 (0.10%) of LKD who developed ESRD over the follow up period. ESRD occurred at about 8.6± 3.2 years (mean ± SD). The absolute increase in the estimated 15 years' incidence of ESRD attributable to live kidney donation was significantly higher in African-American than Caucasians (50.8 per 10,000 vs 22.7 per 10,000) respectively [6]. One third of LKD in that study were related to the recipient and 84% of reported ESRD in LKD were from those who were biologically related to the recipient. This seems to agree with the hereditary factors discussed earlier. However, 15 years' cumulative incidence of ESRD was not significantly different between biologically related and unrelated donors. This increased incidence of ESRD in African-American could have a genetic basis as a variant in the gene for Apolipoprotein L1 (APOL1) has been described in blacks. This suggests that blacks should be screened for APOL1 risk alleles [18]. Also, racial difference in medical outcomes has been reported in LKD [19, 20]. In Nigeria, there is need to screen LKD for APOL1 risk alleles. This is because reports from the Human Genomic Diversity Project and the International HapMap project shows that Yoruba ethnic group of Nigeria clearly harbour the APLO1 alleles in the region of chromosome 22 [21, 22]. Similarly, Ulasi et al in 2015 reported that APOL1 risk variant was common among Igbos which is another Nigerian ethnic group [23]. They reported a strong association between APOL1 risks variants and development of non-diabetic chronic kidney disease (CKD). Tayo and colleagues in 2013 in a case-control study examined the frequency of APOL1 variants among native Africans and their association with non-diabetic forms of CKD. They concluded that APOL1 risk variants are associated with non-diabetic forms of CKD among Yoruba ethnic group of Nigerians [24]. However, the issue of cost will surely be a major factor against large-scale screening for this gene now.

Prospective donors in Nigeria whose pre-donation kidney sizes, as evident from renal imaging shows a difference of greater than 2cm should have the kidney function reassessed. Only one centre in Nigeria performs isotope scan to assess kidney function now.

Grams and colleagues [24] developed a tool that can estimate a prospective donor's probable long-term risk of ESRD [25]. This is not without its limitation [26] but can still be used as a guide. Furthermore, the BTS/Renal Association has adopted the use of age-related threshold GFR (Figure 1) and this can be used as a guide to estimate kidney function in prospective donors in Nigeria as part of pre-donation screening [27].

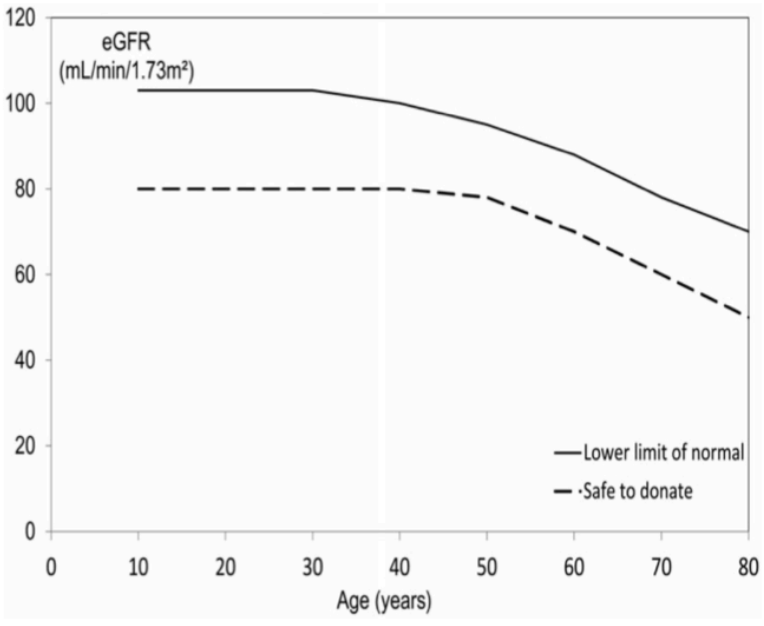

Figure 1: Age-related threshold GFR. The minimum acceptable will be a GFR above 50ml/min/1.73 m2 at the age of 80 years 27].

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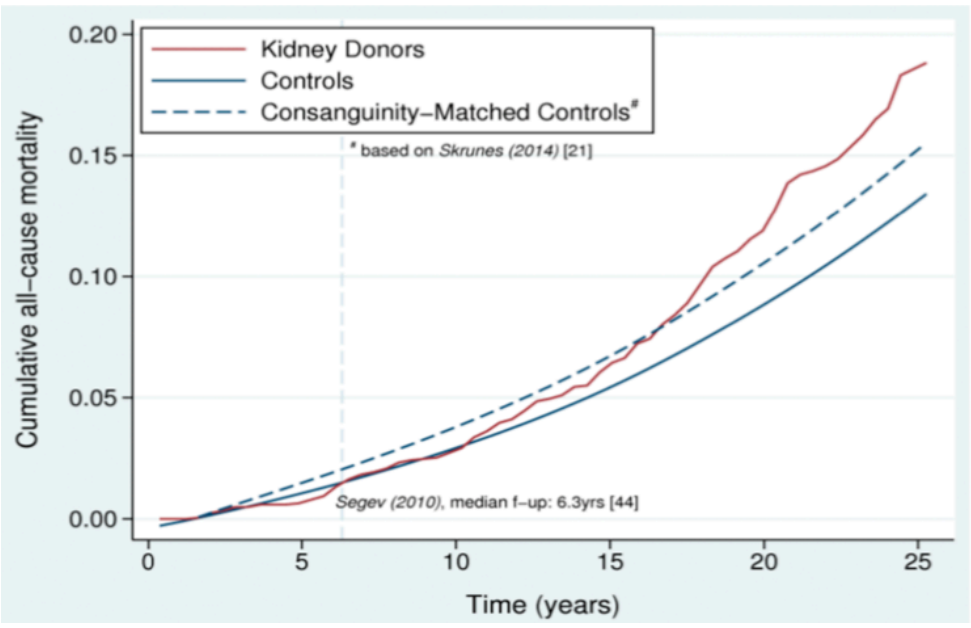

Figure 2: The figure represents the observed mortality in the study by Mjøen et al. in donors (red line) and controls (blue line). Applying a relative risk of 1.10 to 80% of the controls (i.e. the proportional hazard assumption with a first-degree relative with ESRD), under the proportional hazard assumption, the blue line shifts upwards to the dotted blue line, which represents the mortality that would have been observed in the matched controls had the study been adjusted for consanguinity. The distance between the dotted and solid blue line can be regarded as the potential bias in the study, caused by the fact that controls were 'too good' compared with donors because of a less frequent family history of ESRD. The vertical light blue dotted line represents the median follow-up of the study by Segev et al underpinning the fact that the timespan of this study was much shorter than that of the study by Mjøen et al. [26].

Cardiovascular and all-cause mortality

All guidelines consider individual with blood pressure above 140/90 mmHg as being hypertensive. The BTS guideline suggested that hypertensive whose blood pressure is well controlled on 1 or 2 medications should be considered for kidney donation as long as there is no evidence of end organ damage (B1). In Nigeria, prospective donors with blood pressure >140/90mmHg are presently not accepted.

Long term risk of cardiovascular disease and all-cause mortality following live kidney donation

Matas et al in 2017 reviewed the long-term non-ESRD risks associated with kidney donation and concluded that there is serious under-reporting of non-ESRD risks following kidney donation (12). However, three studies in the literature (one from Canada and 2 from the United States of America) compared LKD with healthy non-donors [28-30] and concluded that there is no difference in risks of cardiovascular disease (CVD) as well as all-cause mortality between the two groups. Interestingly, the mean follow- up duration in these three studies was 8yrs. This was rather short when compared with registry study from Norway described above with a follow-up period of 15years [5]. The follow-up duration is quite important as the longer duration study (the Norwegian study) reported increased mortality in LKD compared with healthy non-donors. Other than the duration of follow-up, another major limitation of all these studies is the sharp discrepancies between the LKD and controls. This was addressed in the Norwegian study.

There were reports of racial difference in the cardiovascular disease risk following kidney donation [19, 20, 31]. Lentine et al in 2010 reported a greater risk of hypertension in black as compared to white donors in a retrospective study of registry data [19]. This raises concern about the need for stricter cardiovascular screening for donors in Nigeria and the importance of explaining these potential long-term risk to them. In a recent consensus report [26], Developing Education Science and Care for Renal Transplantation in European State (DESCARTES) board members concluded that the long-term risk of cardiovascular and all-cause mortality risks is not as strong as reported in the Norwegian study (figure 2)

Long term risk of gestational hypertension and preeclampsia following kidney donation

There is an association between chronic kidney disease and increase risk of gestational hypertension (GH), preeclampsia as well as intrauterine growth retardation [32, 33]. Despite these associations, there were previous reports on the pregnancy outcome following LKD showing that there was no increased risk of adverse events like gestational hypertension and preeclampsia [34, 35]. However, neither of these studies compared pre-donation with post-donation pregnancies in the same woman. Conversely, Reisaeter and colleagues (2009) reviewed registry data of kidney donors in Norway between 1967 and 2002 and identified 326 donors with 726 pregnancies (106 after donation). In an adjusted analysis, they observed that preeclampsia was commoner in pregnancies after donation [36]. Interestingly, the authors admitted that their observations should be interpreted with caution as they only identified 6 cases out of 106 post-donation pregnancies (5.7%). Similarly, Ibrahim and colleagues (2009) reviewed the record of 3698 LKD between November 1963 and December 2007 in Minnesota. Two thousand, one hundred and two of these donors were women, 1589 of whom participated in the survey. They observed a significant gestation hypertension and preeclampsia post- donation in the participants and concluded that post-donation pregnancy is associated with increased risk of these adverse outcomes. These outcomes were not different from reported cases in the general population but were observed to be inferior to the pre-donation outcomes [37]. In a Canadian study, Garg and colleagues (2015) reviewed records of 85 women (131 pregnancies) who donated a kidney between 1992 and 2009 in Ontario. Pregnancy outcomes in them were compared with that of 510 healthy non-donors from the general population. They observed that gestational hypertension or preeclampsia was more common in LKD than non-donors who had common baseline health indicators [13].

Reports of pregnancy outcome after kidney donation are lacking in Nigeria. There is a need to inform young women presenting as prospective LKD about the possible long-term risk of adverse pregnancy outcomes. This needs to be supported by evidence-based recommendation. Current European Renal Best Practice Guideline recommend that a woman in her reproductive age who is considered fit for donation should be informed that she is better than an average woman in the general population pre-donation and that donating a kidney will make her be at the same level as those in the general population in terms of risk of gestational hypertension and preeclampsia [38].

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Table 1: Proposed protocaol for living donation work up in Nigeria

A. History (look for/ask about)

1. Family history of kidney disease
2. Hypertension
3. Diabetes
4. Willingness to donate kidney
5. Infections
6. Medications-Non steroidalanti inflammatory drug, vocational drugs, intravenous drug use

B. Physical Examination (look for)

1. Blood pressure
2. Height/weight-Body Mass Index
3. Autoimmunity
4. Cancer
5. Cardiovascular disease
6. Arthrits

C. Laboratory investigations
Urinalysis and urine microscopy
Blood group and genotype
Electrolyte, Liver function test, Lipid profile, fasting blood sugar, Full blood count, 24hour urine protein and creatinine clearance, urine albumin creatinine ratio.
Antiviral screening(HBV,HCV,CMV,HIV,EBV)
Immunological assessments
Tuberculosis screening- Purified protien derivative test
Electrocardiogram, Chest radiograph, echocardiography
Prostate examination for men. PAP smear for women
Where indicated in respect of age/family history: Excercise tolerance test, colonoscopy, mammography, prostate specific antigen.

D. Anotomical examination
Abdominopelvic ultrasound
Computed tomography angiography

Table 2: Proposed contraindications to living kidney donation in Nigeria

Absolute contraindications

1. Uncontrolled hypertension
2. Diabetes mellitus
3. Active malignancy
4. Chronic infection (chronic lung disease)
5. Significant kidney stones (Bilateral/association metabolic abnormalities/history of kidney stones)
6. History of thrombosis or thromboembolism
7. HIV infection
8. Microscopic hematuria
9. Proteinuria (>300mg/24hr)
10. Age less than 18years
11. Evidence of financial inducement

Relative contraindications

1. Obesity (Body mass index greater than 35kg/m^2
2. Psychiatric disorder
3. Drug or alcohol abuse
4. Multicystic kidney disease
5. Small kidneys (bipolar length <9cm suggestive of CKD)

Conclusions.

Live kidney transplantation is increasingly being performed as a renal replacement option. There are reports showing that LKDs have no long-term risks of ESRD, CVD and pregnancy outcomes. However, there are emerging data concluding that reverse is the case. Although the evidence may not be too strong to change the practice of living kidney donation, the onus is on caregivers to outline these risks to intending donors and allow them to make an informed decision. Also, Kidney donors need appropriate work up that is evidence-based and appropriate for the local settings. Hence there is the need for local research that will produce evidence which can then be translated into statements.

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