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Editorial

Bridging the Gap: Addressing Health System Disparities Through Ghana's National Health Insurance Scheme

Ghana's National Health Insurance Scheme (NHIS), established in 2003, aimed to achieve Universal Health Coverage (UHC) by replacing the prohibitive "cash-and-carry" system. Its core objective was to ensure equitable access to essential healthcare services without imposing catastrophic financial burdens. While the NHIS has improved healthcare utilisation and offered financial protection to millions, persistent structural flaws undermine its foundational principles of equity and accessibility. This editorial examines these gaps, drawing on recent empirical evidence, and proposes a strategic pathway to strengthen the NHIS as a robust pillar of Ghana's health system. The National Health Insurance Scheme continues to expand its service coverage and benefits like the free birthday check-up and dialysis services.

Ghana's regional and rural-urban differences significantly challenge the promise of universal health access and coverage under the NHIS. The 2022 Ghana Demographic and Health Survey (GDHS) highlights these disparities. Although NHIS enrollment is relatively high; 90% of women and 73% of men are covered, access and quality of care vary significantly. Evidently, enrollment alone does not ensure equitable access to quality care, particularly in rural settings. These areas face severe shortages of well-equipped facilities, specialized health personnel, and adequate transport infrastructure, posing substantial hurdles for residents. The NHIS must adopt targeted

strategies to address these unique supply-side and demand-side challenges inherent in diverse geographic settings. Despite the NHIS being designed as a pro-poor initiative with premium exemptions for vulnerable groups, it exhibits a "pro-rich" bias in access and benefit utilisation. The 2022 GDHS data reveal stark disparities: 25.23% of women in the lowest wealth quintile have health insurance compared to 14.14% in the highest quintile. Wealthier individuals often rely on private insurance or utilise NHIS services more frequently for costly treatments, absorbing a larger share of total subsidies. This disparity may not be due to the insurance programme but instead arise from behavioural patterns and insufficient knowledge of benefits and the need for insurance.

Moreover, informal payments for services or medicines, which the NHIS should cover, disproportionately burden people experiencing poverty. These unauthorised charges undermine the scheme's objective of financial protection, compelling many back into the "cash-and-carry" trap. This systemic leakage, along with challenges in identifying and enrolling the truly indigent, prevents the NHIS from fully protecting the most vulnerable. This burden may arise in internal health practices, as health workers may favour those who can afford to pay due to understaffing and a significant strain on the health system.

The operational viability of the NHIS is closely linked to the functionality of its accredited healthcare providers. A significant issue is the chronic delay in reimbursement claims from the National Health Insurance Authority (NHIA) to healthcare facilities. Such delays create cash flow problems for providers, resulting in shortages of essential medications and a decline in service quality. In response, some facilities resort to illegal co-payments or become reluctant to serve NHIS cardholders, eroding public trust and forcing patients to make out-of-pocket payments.

The increase in healthcare utilisation following the implementation of the NHIS has also placed immense pressure on the healthcare infrastructure. Many facilities struggle with inadequate equipment and human resources, further complicating the delivery of quality care.

The key gap for NHIS insurance to achieve its goals is uptake, addressing misconceptions, usage, and enforcement at healthcare centres, which need to be bridged.

To strengthen the NHIS and realise its intended goals, concerted efforts are necessary to address the highlighted disparities and systemic challenges. This includes implementing targeted strategies for underserved regions, addressing wealth-related biases, and enhancing the operational capacity of healthcare facilities to ensure that all Ghanaians can access essential health services without financial hardship, addressing critical gaps.

Dr. Sylvester Yaw Oppong

A Study On The Use Of Smartphones To Improve Adherence To Anti-Diabetic Treatment In A Tertiary Hospital in Accra, Ghana

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Abstract

Introduction: Diabetes Mellitus is a disease caused by the body's inability to control blood glucose levels, with Type 1 and Type 2 being the two main types. It can lead to serious medical issues such as kidney, eye, and cardiovascular problems, and is the 7th most significant cause of death globally. Patients and their families are financially burdened by diabetes, with hospital inpatient treatment, medical supplies, and physician appointments making up the majority of the direct costs. The use of smartphones has made it easier to provide patient-centred healthcare, fostering a collaborative relationship between patients and medical personnel at a lower price and faster pace.

Aim: The main objective of this study is to examine the use of Information and Communication Technology tools (smartphones) in treatment adherence in patients with diabetes mellitus at the Greater Accra Regional Hospital (GARH).

Methods: This exploratory cross-sectional study employed a questionnaire administered to patients at the GARH Diabetes Clinic. The extracted data was analysed using WPS Spreadsheet and Statistical Package for the Social Sciences, Version 27. Data was analysed using descriptive statistics (Frequency and percentages).

Results: The study included 120 participants (61 females and 59 males), predominantly aged over 45 years, residing in Accra. Type 2 Diabetes was prevalent in 68.3% of participants, with 31.7% having Type 1 Diabetes, all diagnosed six months ago. Most patients managed their condition well, attending clinics consistently. The study found that 74.1% of participants owned smartphones, with a majority having owned them for over a year. Additionally, 30.3% were aware of diabetes apps, and 58.1% of those who were aware and used them. "My-Therapy" was the top medication tracker, and "Diabetes diary-Glucose tracker" was for glucose monitoring. Users found the apps to be beneficial (88.9%), which correlated with a decrease in hospitalisations. Limited awareness, unavailability, and compatibility concerns deterred usage; however, participants expressed willingness to embrace such apps.

Conclusion: This study examined participants' socio-demographics, diabetes-related information, smartphone usage, and awareness of diabetes apps. Findings showed positive perceptions of the benefits of apps but highlighted low awareness among non-users. Targeted efforts are needed to promote app adoption for better diabetes management.

Keywords: Adherence, anti-diabetic treatment, diabetic-related apps, smartphones, diabetes mellitus.

Introduction

Diabetes mellitus is a condition caused by the body's inability to regulate blood glucose levels. The two main types are Type 1 and Type 2 diabetes. Type 1 diabetes develops when the body cannot produce enough insulin; it is insulin-dependent. Type 2 diabetes develops when the body produces enough insulin but is unable to use it properly, thus called non- insulin-dependent diabetes mellitus (NIDDM).^{1,2} The disease can cause severe harm to the body's essential organs, such as the kidneys, eyes and others, which can result in impairments and occasionally even death.¹ According to the International Diabetes Federation (IDF), the disease affected 463 million people worldwide in 2019 and was the 7th leading cause of death globally.² Patients and their families are severely financially burdened by diabetes. Hospital inpatient treatment, medical supplies, and physician appointments account for the majority of direct costs. The indirect costs are associated with higher absenteeism, worse productivity at work, and less capacity for production due to a disability related to diabetes mellitus.²

Information and Communication Technology (ICT) use has made it easier to provide patient-centred healthcare, which fosters a collaborative relationship between patients and medical personnel at a lower cost and faster pace. Additionally, it has enhanced the standard of care and the communication between patients and medical staff. As a result, it is becoming a vital tool for improving the delivery of healthcare services worldwide.³ Due to population increase, age, urbanisation, rising obesity rates, and physical inactivity, there is an increasing number of persons with diabetes mellitus.⁴ Recently, health technology has been rapidly developed and used to process, access, and retrieve data and information effectively and efficiently. Currently, most European nations use ICT in healthcare. The usage of computers in the healthcare industry is virtually universal. E-health plans and initiatives, including electronic medical reports and e-prescriptions, are also in place in many European Union countries.⁵

ICT has become a necessary tool for health professionals notably nurses in addition to playing a crucial role in clinical practice and research. They are leading the charge in organising and delivering healthcare services. They must immediately adapt their services to the present technological transition which includes communication and decision-making.⁶ Adherence to drug therapy refers to how closely a person follows advice from medical professionals regarding using drugs or making lifestyle adjustments.⁷ Non-adherence occurs when a patient fails to comply with a prescription or stops using a medication.⁸ Non-adherence frequently raises the risk of relapse, sub-therapeutic results, and avoidable deaths.⁸ This can happen due to either intentional or unintentional reasons.⁹ When patients do not take their medications as prescribed there is increased hospital admissions, readmissions, emergency room visits, and fatalities.^{10,11} A growing body of literature on patient adherence to anti-diabetic treatment regimen has shown that a significant proportion of patients are non-adherent, ranging from as low as 6.3% to as high as 87%.¹² Medication non-adherence is a significant problem in low-and middle-income countries, such as Ghana. Diabetes also accounted for 6.8% of all adult admissions and 7.8% of all adult deaths at the Korle-Bu Teaching Hospital.¹³

With previous studies showing a meagre prevalence rate of less than 0.02% of the adult population and more current statistics ranging from 6.2% to 13.9%, Ghana's trends in the prevalence of diabetes do not materially differ from those reported in other sub-Saharan African countries.¹⁴ In Ghana, like in many other Low and Middle Income Countries (LMICs), there are few national level data on medication adherence, particularly among patients with diabetes and hypertension. However, a study conducted by Bruce et al., discovered a 38.5% adherence rate among diabetic patients.¹⁵ These numbers fall below the suggested 90% threshold.¹⁶

A study conducted at the Ho Municipal Hospital in the Volta region of Ghana reported that patients living with diabetes mellitus had high levels of uncontrolled glycaemia and blood pressure

secondary to medication non-adherence.¹² This study aims to examine the use of ICT tools (Smartphone Apps) in treatment adherence among patients with diabetes mellitus at the Greater Accra Regional Hospital.

Methods

This cross-sectional study was conducted at the Greater Accra Regional Hospital (GARH), located in North Ridge, within the Osu-Klottey Sub-Metro of the Accra Metropolitan Area, Greater Accra Region, Ghana. It covers a land area of approximately 15.7 acres with an estimated population of over 4,671,363 based on 2016 projections from the 2010 Ghana Statistical Service census. The immediate catchment area includes suburbs such as Ridge, Nima, Maamobi, Kanda, Accra New Town, Kotobabi, Osu, La, Adabraka, Achimota, Airport Residential Area, and Central Accra.

The study population consisted of individuals aged 18 years or older who were diagnosed with diabetes mellitus and presented at the special Out-Patient Department (OPD) clinic at GARH, and who provided consent to participate in the study. The inclusion criteria required participants to have been on medication for at least six months and to have provided informed consent.

A convenient sampling method was employed to select participants. A total of 120 participants were included in the study. Data collection took place over one month, from February to March 2023, following the pretesting of the research questionnaire. The data were primarily quantitative, collected through a structured questionnaire tailored to the respondents' understanding and comprehension. The response categories for various questions were mostly pre-coded. Approval for the study was obtained from the Ethical and Protocol Review Committee of the Department of Community Health, Family Health Medical School (FHUC- EPRC-037/2023). Ethical considerations were observed in the design of clear and concise questions, the avoidance of emotionally triggering queries, and the obtaining of informed consent from participants. Descriptive

statistics were performed using Excel Spreadsheet software and SPSS version 23 to code and analyse the data, which was expressed in frequencies and percentages. Results were presented in tables and charts.

Results

The study involved 120 participants with a reasonably balanced gender distribution: 61 females (50.8%) and 59 males (49.2%). Most participants were above 45 years old (54.2%) and only 1.7% below 25 years of age (Table 1). Regarding education, more than 95% had at least high school education. Employment types varied, with 35.8% self-employed, 32.5% employed, 22.5% unemployed, and 4.2% students. Majority (48.3%) were married and lifestyle habits indicated that 71.7% were non-drinkers and non-smokers and 4.2% engaged in both cigarette smoking and alcohol consumption (Table 1).

Eighty-two participants (68.3%) were diagnosed with type 2 diabetes, whereas 38 participants (31.7%) had type 1 diabetes, and all were diagnosed over six months before the study. Clinic attendance varied, with 58 participants (48.3%) performing very well, 52 participants (43.3%) performing well to some degree, and 10 participants (8.3%) not performing well to some degree. Regarding optimal blood sugar maintenance, 63 participants (52.5%) were doing very well, 24 participants (20%) were doing somewhat well, and 33 participants (27.5%) were not doing well. In self-blood sugar testing, 80 participants (66.7%) performed very well, 21 participants (17.5%) performed well to some degree, 16 participants (13.3%) did not perform well, and 3 participants (2.5%) never completed the test.

When experiencing symptoms like tremor, pallor, and headache, 74 participants (61.7%) frequently did a self-sugar test very well, 32 participants (26.7%) did well to some degree, 11 (10%) did not do well, and 3 participants (2.5%) never did the test. Medication compliance showed that 56 participants (46.7%) performed very well, 36 (30%) performed well to some degree 22 (18.3%) did not

perform well, and 6 (5%) never performed well. In terms of diabetes information-seeking behaviours, 37 participants (30.8%) were very enthusiastic, 23 (19.2%) showed moderate interest, 43 (35.8%) reported some disinterest, and 17 participants (14.2%) never actively pursued information through educational programs.

Table 1 Socio-demography of study participant

Category	Frequency	Percentage
Sex		
Female	61	50.8
Male	59	49.1
Age (years)		
18-25	2	1.7
26-35	8	6.7
36-45	45	37.5
Above 45	65	54.2
Level of Education		
Less than High School	6	5.0
High School	30	25.0
College	12	10.0
Bachelor's Degree	26	1.7
Graduate	32	26.7
Higher Education	14	11.67
Employment Status		
Student	5	4.2
Employed	39	32.5
Unemployed	27	22.5
Self-employed	43	35.8
Part-time Employed	6	5.0
Marital Status		
Single	24	20.0
Divorced	23	19.2
Married	58	48.3
Widowed	15	12.5
Lifestyle		
Smoking cigarette	2	1.7
Alcohol	27	22.5
Both Smoking & Alcohol	5	4.2

Enquiry about reasons for not using applications showed the 91 (75.8%) participants had never heard of such smartphone apps, 11 (9.2%) answered that the apps were incompatible with their mobile devices, 10 (8.3%) stated they had no reason, and 5 (4.2%) responded that they were challenging to use. The remaining 3 each stated that the apps were not available on Apple shop, expensive to buy or needed help for the use. With exception of 3 participants, all others (117, 97.5%) are willing to explore and use apps.

Table 2 summarizes key findings on smartphone ownership, duration of usage, frequency of use, awareness, and utilisation of diabetes-related apps, as well as their impact on health management among 120 participants. A majority (74.1%) owned a smartphone, with most using it for over a year. However, only 30.3% were aware of diabetes-related applications (apps) and among them 59.3% actively used such apps for medication tracking and glucose monitoring. The results also show reduction in hospital admissions after app usage, with 85% of app users reporting fewer than two hospital visits per year, compared to higher admission rates before app adoption.

Table 2 Smartphone Ownership, Usage, and Impact on Health Management Among Participants

Category	Subcategory	Frequency	Percentage
Ownership of smartphones (120)	Owns a smartphone	89	74.2
	Does not own a smartphone	31	25.8
Smartphone Use (89)			
Duration of Smartphone Usage	Over a year	78	87.6
	About a year	6	6.7
	A few months	5	5.6
Frequency of Smartphone Usage	Very frequently	48	53.9
	More frequently	17	19.1
	Constantly	14	15.7
Knowledge of Smart-phone Apps	Not often	10	11.2
	Aware of diabetes-related apps	27	30.3
	Not aware of diabetes-related apps	62	69.7
Usage of Diabetic Related Apps (27)			
	Uses the apps actively	16	59.3
	Uses the apps less actively	4	14.8
	Does not use the apps	7	25.9
Common Apps Used for Tracking Medications (20)			
	MyTherapy	6	30.0
	Pill Reminder and Tracker	5	25.0
	MedicaReminder	4	20.0
	Uses MedicaReminder & MyTherapy	1	5.0
	Uses all three apps	1	5.0
	Uses MedicaReminder & Pill Reminder, and Tracker	1	5.0
Common Apps Used for Glucose Monitoring (5)			
	Diabetes Dairy-Glucose Tracker & Blood Sugar Buddy	2	40.0
	Diabetes Diary - Glucose Tracker	1	20.0
	MySugar	1	20.0
	Blood Sugar Buddy	1	20.0
Benefits of Using Apps (20)			
	Very helpful	18	90.0
	Moderately helpful	2	10.0
Hospital Admissions Before App Usage (20)			
	2-5 times per year	9	45.0
	5-10 times per year	7	25.0
	Less than twice per year	4	20.0
Hospital Admissions After App Usage (20)			
	Less than twice per year	17	85.0
	2-5 times per year	3	15.0

Discussion

This study examined the use of ICT tools (Smartphone Apps) in treatment adherence in patients with diabetes mellitus at the Greater Accra Regional Hospital. The results showed that 74.1% participants own a smartphone, and 87.6% of the owners have used these devices for over a year. Additionally, 88.8% of the owners regularly use their smartphones, suggesting that they are well-experienced in smartphone use.

These findings are consistent with a study conducted in South-West Nigeria by Olamoyegun et al., that the majority (97.3%) of patients with diabetes owned mobile phones.¹⁷

This finding could be attributed to the fact that most participants were in an urban setting where communication is essential, as well as the relatively low cost of owning a phone. Less than half of the study participants, 46.7% were compliant (always adhering to the medication regimen very well). These findings are similar to Ghanaian studies that reported a compliance percentage of 38.5% and 47.6% among diabetic patients.^{15,18}

It was also observed that most participants 69.2% were not particularly interested in or concerned with obtaining modern updates on diabetes control from various information sources, which may have influenced the findings of this study regarding their compliance with anti-diabetic treatment. An example is the use of smartphone applications for tracking medication intake and blood glucose monitoring. It revealed that the majority of participants (84.2%) performed a self-blood sugar test. It is unexpected because if the majority are poorly compliant with medications, they will probably not be bothered to do a self-blood sugar test. However, it is observed that even a greater percentage of participants do a self-blood sugar test only when they experience symptoms. A similar study by Osei-Yeboah et al., in Ho Municipality in Ghana showed that the optimal medication adherence was 60.7% and glycemic control were achieved in 33.3% of cases with prevalence of glycosuria and proteinuria being 10.7% and 3.3% respectively.¹² Percentage glycemic control was found to be higher among the medication adherent

group, while glycosuria and proteinuria were the highest among participants presenting with low medication adherence. The present findings are also in consonance with a study by Potakey on non-adherence to medication among people living with Type 2 diabetes at Shai Osudoku District Hospital, which reported that medication adherence to anti-diabetic medications was very poor.¹⁹

Mobile phone Apps are important features of smartphones, giving them the ability to perform various functions that make life easier. There is a wide range of mobile apps on the market that serve multiple purposes, so it is worthwhile to do some research to explore these various apps that can help make life easier. Although 74.2% in this study had smartphones, only 30.3% of these owners were aware of these apps and 22.5% could use them. This is lower than a similar study by Kebede & Pischke, which was web-based, and reported that more than half (52.2%) and one third (33.3%) of respondents with Type 1 and 2 Diabetes respectively, reported using diabetes apps for self-management.²⁰ This means that many of the participants were aware of these diabetic apps. The lack of awareness in the participants of the present study can be attributed to their limited interest in exploring methods of managing diabetes through educational programs, forums, or the internet. Specifically, 69.2% expressed a lack of interest in diabetes control programs probably due to being in the older generation group (45 years and older). It was evident that most participants were unaware of the existence of these apps due to limited knowledge of digital apps used to improve medication adherence.

Participants who used these applications primarily used both Diabetes Diary and Blood Sugar Buddy for glucose monitoring (40%) and MyTherapy for tracking medications (35%). This is in contrast to the survey by Kebede et al., found that "mySugar" was the most popular diabetes app among both groups of respondents with type 1 and type 2 diabetes mellitus.²⁰ The same study also referred to other apps for glucose monitoring, but they are not commonly used in Ghana, except for mySugar.²⁰

All participants who used these apps benefited from them, with 88.9% having fewer hospital admissions

and symptoms while using these apps compared to before they started using the apps (44.4%). This aligns with previous reports that continuous usage of the diabetes management app is associated with better glycemic control in the real world clinical practice.^{20,21}

Conclusion

The study reveals high smartphone ownership among participants, with a reduction in hospital admissions for those using diabetes-related apps. Despite limited awareness, the significant

health benefits for informed users highlight the potential of these apps. Enhancing awareness and utilisation can further improve health outcomes and decrease healthcare costs. Integrating mobile technology into health management is crucial for better management of chronic conditions. The findings emphasise the importance of leveraging smartphone applications to enhance quality of life.

Conflict of Interests

Authors declare no competing interests.

References

1. American Diabetes Association. Standards of Medical Care in Diabetes 2019. Abridged for Primary Care Providers. Diabetes Care. 2019;37(1).
2. International Diabetes Federation. IDF Clinical Practice Recommendations for Managing Type 2 Diabetes in Primary Care. [Internet]. 2019 [cited 2025 Feb 4]. Available from: <https://www.idf.org/e-library/guidelines/128-idf-clinicalpractice-recommendations-for-managing-type-2-diabetes-in-primarycare.html>
3. Rouleau G, Gagnon M-P, Côté J. Impacts of information and communication technologies on nursing care: an overview of systematic reviews (protocol). Systematic Reviews. 2015;4(1):75.
4. Wild S, Roglic G, Green A. Global prevalence of diabetes. Diabetes Care. 2005;27(5):1047-53.
5. Seghieri C, S.D. Basic ICT adoption and use by general practitioners: an analysis of primary care systems in 31 European countries. BMC Med Inform Decis Mak. 2015.
6. Rowe M. Information and communication technology in health: a review of the literature. J Community Health Sci. 2008.
7. Sabaté E. Adherence to long-term therapies: evidence for action. Geneva: World Health Organisation; 2003.
8. Mattke S, Klautzer L, Mengistu T. Health and Well-being in the home: A global analysis of needs, expectations, and priorities for home health care technology. Rand Corporation; 2011.
9. Lehane E, McCarthy G. Intentional and unintentional medication non-adherence: a comprehensive framework for clinical research and practice? A discussion paper. Int J Nurs Stud. 2007;44(8):1468-77.
10. Brown MT, Bussell JK. Medication adherence: WHO cares? In: Mayo Clinic Proceedings. Elsevier; 2011:304-14.
11. Osterberg L, Blaschke T. Adherence to medication. N Engl J Med. 2005;353:487-97. doi: 10.1056/NEJMr050100. PMID: 16079372.
12. Osei-Yeboah J, Lokpo SY, Owiredun WK, Johnson BB, Orish VN, Botchway F, Ussher FA, Avorkliyah R. Medication adherence and its association with glycaemic control, blood pressure control, glycosuria and proteinuria among people living with diabetes. 2018.
13. Addo B, Sencherey S, Babayara MN.

Medication noncompliance among patients with chronic diseases attending a primary health facility in a Periurban District in Ghana. *Int J Chronic Dis*. 2018;1-10. doi: 10.1155/2018/7187284.

14. Asamoah-Boaheng M, Sarfo-Kantanka O, Tuffour AB, Eghan B, Mbanya JC. Prevalence and risk factors for diabetes mellitus among adults in Ghana: A systematic review and meta-analysis. 2018.
15. Bruce SP, Acheampong F, Kretchy I. Adherence to oral anti-diabetic drugs among patients attending a Ghanaian teaching hospital. *Pharmacy Practice*. 2015;13(1):533. PMID: 25883693.
16. Cramer JA. A systematic review of adherence with medications for diabetes. *Diabetes Care*. 2004;27(5):1218-24. PMID: 15111553.
17. Olamoyegun MA, Raimi TH, Ala OA, Fadare JO. Mobile Phone Ownership and Willingness to Receive mHealth Services among Patients with Diabetes Mellitus in South-Western Nigeria. *Pan Afr Med J*. 2020;37:29. doi: 10.11604/pamj.2020.37.29.25174.
18. Aflakpui PE, Bando DA, Kploanyi EE, Kenu E, Addo-Lartey AA. Prevalence and factors associated with low medication adherence among Type 2 Diabetic patients attending a diabetic clinic at the Tema General Hospital, Ghana. *Journal of Interventional Epidemiology and Public Health*. 2022 Apr 20;5(
19. Potakey GA. Nonadherence to medication among people living with type 2 diabetes mellitus: a study at Shai-Osudoku District Hospital University of Ghana. [Internet]. 2020 Jun [cited 2025 Feb 4]. Available from: <https://ugspace.ug.edu.gh/bitstream/handle/123456789/36177>
20. Kebede MM, Pischke CR. Popular diabetes apps and the impact of diabetes app use on self-care behaviour: a survey among the digital community of persons with diabetes on social media. *Front Endocrinol*. 2019;10:135.
21. Tu Y-Z, Chang Y-T, Chiou H-Y, Lai K. The effects of continuous usage of a diabetes management app on glycemic control in real-world clinical practice: Retrospective analysis. *J Med Internet Res*. 2021;23(7). doi: 10.2196/23227.

Perceptions And Attitudes Towards Female Reproductive Health: A Study In Agblezaa In The Ledzokoku Municipal Community, Accra-Ghana

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Abstract

Introduction: Reproductive health encompasses physical, mental, and social well-being, including safe and satisfying sexual experience, reproductive capacity, and autonomy in decisions concerning reproduction. Challenges concerning female reproductive health in Ghana arise from cultural misconceptions leading to harmful practices like using unproven products for vaginal tightening and avoiding oral contraceptives. These show a missing link to modern practices that improve female reproductive health.

Aim: The aim of the study is to assess the perceptions and attitudes towards female reproductive health among the people of Agblezaa.

Methods: A cross-sectional study with closed and open-ended questionnaires administered to 18 to 45 years old male and females respondents at the Agblezaa Municipality from 27th March to 3rd April, 2023. Data was extracted and entered into WPS software (version 11.33.60). The summary

data was presented as frequencies and percentages. Open-ended questions were analyzed thematically

Results: Out of the 220 participants, 125 (56.8%) were females, 94 (42.7%) were males and 1(0.5%) did not identify with any gender. The dominant ages were 20-30 and 30-40 (85, 38.6% each). Over 74% (164) believed the misconception that washing inside the vagina with water or soap promotes hygiene, about 60% associate multiple sex with vaginal loosening and over have 51.3% links contraceptives with cancer. Therefore, 36.8% respondents used unique products to wash the vagina, 23% used vaginal tightening products and 21.4% avoided oral contraceptives.

Conclusion: The complexity of reproductive health perceptions and attitudes coupled with high prevalence of misconceptions within the Agblezaa community, underscores the need for targeted educational interventions through opinion leaders and policy makers to mitigate the outcome of these misconceptions.

Keywords: Attitudes, cultural misconceptions, interventions, female reproductive health

Introduction

Reproductive Health (RH), as defined by the World Health Organization is a state of complete physical, mental, and social well-being and not merely the absence of infirmity or disease in all matters relating

to reproductive system and to its functions and processes.¹ It implies that individuals can enjoy a safe and satisfying sex life, can reproduce and have the freedom to decide if, when, and how often to do so.^{2,3}

World Health Organization (WHO), is of the view that, to understand the dynamics that drive poor reproductive and sexual health and to illuminate its links to poverty, gender, and social vulnerability, it is important to access accurate information.⁴ In Ghana, talking about female reproductive health is complex, due to misunderstandings about the female body.⁵ Misconceptions continue to grow because of culture and old beliefs. For example, some people think a woman's body changes after having sex many times or that a certain way of burying the placenta helps with getting pregnant again. Both the educated and uneducated believe these myths which lead to strange practices, like using unproven products for vagina tightening or relying on untrained traditional birth attendants to conduct deliveries outside health facilities.⁵ Studying and educating people about these misconceptions may stop some of the false beliefs from spreading as has been reported in previous studies elsewhere.^{3,6,7} Changing these false beliefs and changing how people think require a collaborative effort between healthcare experts, teachers, community leaders, and decision-makers.⁸⁻¹⁰ This allows people to make informed decisions about their reproductive health.^{11,12} This study therefore, explored the perceptions and attitudes towards female reproductive health among both males and females in their reproductive age in the study population to find the missing gap.

Methods

This is a cross-sectional study design which utilized a quantitative research approach to achieve the objectives of the study. The study was conducted in Agblezaa, a suburb of Ledzokuku Municipal Assembly (LEKMA) with a population of 16,102. The study included males and females from 18 to 45 years old. Participants of the study were recruited using a non-probability sampling technique known as convenient sampling. The sample size was 213 with 10% (21) addition to allow for non-respondents making it 234. Sample size was determined using Cochran's formula $n = \frac{z^2 pq}{e^2}$

(z, z-score; p, prevalence of people with negative perception, q, 1- prevalence of people with negative perception).

After informed consent were obtained from participants, data was collected through an interview guide with well-structured questionnaire which were made up of both open and close ended questions. Questions were asked under 3 main broad topics to fulfill the objectives of the study. It was translated to Twi, ewe, and Ga for better understanding. The 20 questionnaire were first pre-tested at Family Health Hospital and revised before the data was collected. The study protocol was approved by the Ethical and Protocol Review Committee of the Department of Community Health, Family Health Medical School (protocol identification number FHUC-EPRC- 038/2023 and the letter was sent to LEKMA (27/03/2023).

The study collected data on socio-demography of participants, variables related to perceptions, attitudes, and factors regarding reproductive health myths and misconceptions. The outcome variable measured was the effects on RH. Participants were also given the opportunity to express their feelings and thoughts about the impact of these myths and misconceptions. Data was analyzed using WPS office version 11.33.60 and SPSS version 23. Descriptive statistics were used to summarize the data collected. The responses to the statements were presented as frequencies and percentages to provide an overview of the perceptions and attitudes towards reproductive health, the effect of these perceptions and the factors influencing participants' views.

Results

Two hundred and twenty (220) people participated in the study. Of these, 125 (56.8%) were females, 94 (42.7%) were males and 1(0.5%) did not disclose gender. Majority of the respondents were between 20-40 years (70.8%), 65.9% were Christians, 48.4% were of the Ga tribe, 40.8% had tertiary education, 48.8% were married and 81.4% had children

(Table 1).

Table 1 Socio-demography of study participants

Variable	Frequency (N)	Percentage (%)
Age		
18 -20	22	10.0
20 -30	85	38.6
30 -40	85	38.6
40 -45	23	10.5
Non response	5	2.3
Gender		
Male	94	42.7
Female	125	56.8
Non response	1	0.5
Religion		
Christianity	144	65.5
Islam	38	17.3
Traditional	23	10.5
Non response	15	6.8
Ethnic group		
Ewe	22	10.0
Akan	65	29.5
Ga	106	48.2
Northern	27	12.3
Education		
Primary	31	14.1
Junior high	27	12.3
Senior high	72	32.7
University	89	40.5
Non response	1	0.5
Sexually active		
Yes	206	93.6
No	12	5.5
Non response	2	0.9
Parent		
Yes	175	79.5
No	43	19.5
Non response	2	0.9
Marital Status		
Single	98	44.5
Divorced	14	6.4
Married	106	48.2
Non response	2	0.9
Use of reproductive health services		
Yes	195	88.6
No	23	10.5
Total	220	100

Table 2 shows the perception or respondents toward reproductive health. For example, majority (74.5%) believed washing inside the vagina with water or soap promotes hygiene, 59.5% associate multiple sex with vaginal loosening, 54.5% believed the front part of the placenta where the umbilical cord was attached must be buried in a specific way after delivery and 51.3% believed that contraceptives cause cancer.

Table 2 Perceptions of participants on reproductive system

Perception Items	True N(%)	False N(%)	Non response N(%)
Washing inside the vagina with water or soap keeps the vagina hygienic.	164 (74.5)	55(25)	1(0.5)
The vagina will become loose after multiple sex	131 (59.5)	88(40)	1(0.5)
The front of the placenta where the umbilical was attached must be buried in a specific way after delivery.	120 (54.5)	98(44.5)	2(1)
Contraceptives can cause cancer.	113(51.3)	105 (44.7)	2(1)
Having sex in your period is safe	70(31.8)	149 (67.7)	1(0.5)
You must see blood on your first sexual encounter	70(31.8)	148 (67.2)	2(1)
Grounded glass can be used to abort pregnancy	55(25)	164 (74.5)	1(0.5)

Abbreviation: N, Frequency; %, Percent

The use of unique products or soap and water to wash the inside the vagina was practice by about 36.8% and 23.6% of participants respectively. Over 23% of respondents use vagina tightening products. (Table 3). It was also shown that about 19.5% bury the placenta and 13.2% consume it.

Table 3 Attitude toward reproductive system

Attitude Variable	Yes	
	Frequency (N)	Percent (%)
Usage of unique products to wash the vagina (e.g., feminine wash)	81	36.8
Douching (washing the inside of the vagina with soap or water)	52	23.6
Use of vagina tightening products to make the vagina tighter	51	23.2
Do not use oral contraceptives.	47	21.4
Bury placenta after childbirth.	43	19.5
Having sex when menstruating	34	15.5
Eat placenta after childbirth	29	13.2

Majority (76.3%) of respondents have experienced significant lifestyle changes influenced by learned perceptions about RH. Additionally, 34.5% rely on their religion and culture for RH education, leading some to avoid seeking medical assistance. Confusion due to conflicting RH information affected 43.6% of respondents, while 57.3% no longer trust doctors. Furthermore, 47.7% expressed a lack of believe in contraceptives, resulting in increased childbirth (Table 4).

Table 4 Impact of perception and attitude towards reproductive health

Impact Variable	Frequency	Percent (%)
Some of these myths have caused me to change my lifestyle, like purchasing unique products for my vagina or pushing my partner to use products frequently	168	76.3
I no longer seek medical opinions about my reproductive health due to religion or cultural knowledge	76	34.5
Because of the different perceptions about reproductive health, I am confused about what to believe	96	43.6
I do not trust the doctor or nurse sometimes because of the perceptions I have about reproductive health	126	57.3
I do not believe in contraception, so I have many children	105	47.7

The respondents' responses pointed to various factors affecting perception and attitude toward reproductive health. These included; religious affiliation (85, 38.6%), socio-cultural orientation (58, 23.4%), parents (50,22.7%) and school attendance (25, 11.4%).

Discussion

The study revealed the perceptions and attitudes toward reproductive health and their effects. It also showed that participants' religion, traditional and cultural practices as well as parents and education contributed to these perception.

Perception about family planning is consistent with findings by Lukumay et al., in Tanzania, where community members perceived greater health risks from modern family planning methods than evidence suggests.⁶ Additionally, misconceptions about contraceptives, such as the belief that they can cause cancer, were identified in alignment with

Eshak's study in Minia, Egypt, where participants similarly believed that birth control pills cause cancer.¹³ This emphasizes the global persistence of misconceptions surrounding family planning practices. Research, such as a comprehensive analysis by the International Agency for Research on Cancer (IARC), has shown that the use of hormonal contraceptives is not associated with an increased risk of cancer, and in some cases, it may even have protective effects against certain cancers, such as ovarian and endometrial cancers.¹⁴

The current findings on misconceptions about the female reproductive health, including misconceptions about vaginal hygiene and bleeding during first sexual intercourse, are consistent with the broader myths.¹⁵⁻¹⁷ The consistency of these findings across different studies underscores the pervasive nature of these misconceptions and negative perceptions.^{16,17} They highlight the need for comprehensive sexual education, debunking myths, and fostering open conversations about sexual and reproductive health to address these issues effectively. The vagina is self-cleaning, and using water or soap internally is unnecessary, risking pH imbalance. The misconception of vaginal looseness after sex is debunked; the vagina, a muscular organ, returns to its normal state after sex. Sex during menstruation is considered safe, though risks of Sexually Transmitted Infections (STIs) exist.¹⁸ Bleeding during first intercourse, a misconception tied to hymen myths, is not guaranteed; absence indicates nothing abnormal.

The study highlighted the influence of respondents' religious affiliations on their perceptions and attitudes, aligning with a study that reported on religious and cultural beliefs as barriers to accessing Sexual and Reproductive Health (SRH) services and using contraceptives.^{11,15,19} Socio-cultural factors were pivotal in shaping perceptions and attitudes, consistent with observations of Alomair et al., on family and community impact.¹⁹ The absence of comprehensive sexual education and accurate information contributed to misconceptions, and the thriving of myths in contexts devoid of education and accurate information dissemination.^{3,9} A prescriptive study, reported that stigma and gender-

based discrimination are associated with women's reproductive health, aligning with the study's outcomes and the observations of Bui and Njuki on the origin of myths in gender norms.^{16,17} The systematic review by the United Nations Population Funds identified determinants influencing women's decision-making in SRH, mirroring the multifaceted factors illuminated by the study, including religious, cultural, familial, societal, and educational dimensions.²⁰ These findings underscore the need for culturally sensitive sexual education initiatives, improved access to accurate information, and efforts to challenge societal norms perpetuating myths and misinformation.

The significant role of religion, parents, and medical teams in shaping members' knowledge about reproductive health is highlighted, emphasizing the importance of disseminating correct information through religious systems and ensuring parents are well-informed to guide their children appropriately.^{19,21} A study by Kumi et al., highlights the impact of socio-cultural taboos on emotional well-being and lifestyle choices among women.⁵ Furthermore, the study highlights participants who linked their understanding of reproductive health to their religious beliefs and cultural heritage. As a result, certain individuals chose not to seek medical help from hospitals due to the substantial impact of these aspects. This aligns with the observations that reported the widespread existence of unfavorable viewpoints leading adolescents to explore alternative options such as traditional healers, even in the face of elevated levels of sexual activity and STI.^{13,22}

The fact that about 48% of respondents have lost faith in contraceptives and are opting to have multiple children aligns quantitatively with the intricate nature of sexual and reproductive health decision-making. Factors like religious beliefs, cultural norms, and lack of accurate information contribute to a range of diverse reproductive health choices. The data reveals the significant impact of misconceptions on participants' RH attitudes and behaviors. Addressing these issues is crucial for informed RH decision-making and overall well-being.²¹

The data reveals the impact of misconceptions on participants' RH attitudes and behaviors. Addressing these issues is crucial for making informed RH decision and overall well-being. In conclusion, this research reveals that in the Agblezaa community, people have various beliefs and opinions about reproductive health. These beliefs, often influenced by factors like religion and culture, are not always accurate. It emphasizes the urgent need for specific educational efforts to provide correct information. Healthcare seeking behavior can be promoted through a supportive environment, evidence-based

practices, and peer education programs, long-term monitoring, research and evaluation will help to ensure sustained impact.

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Conflict of interest

The authors declare no conflict of Interest.

References

1. World Health Organization., Sexual health, human rights and the law. 2015.
2. Tarar MA, Akhtar S, Zafar MI, Muhammad S. Reproductive health: perceptions, attitudes and practices among young females in Faisalabad District, Pakistan. *The Professional Medical Journal*. 2015 Jan 10;22(01):081-99.
3. Govender D, Naidoo S, Taylor M. Knowledge, attitudes and peer influences related to pregnancy, sexual and reproductive health among adolescents using maternal health services in Ugu, KwaZulu-Natal, South Africa. *BMC public health*. 2019 Jul 11;19(1):928.
4. World Health Organization. State of inequality: reproductive maternal newborn and child health: interactive visualization of health data. World Health Organization; 2015 May 26.
5. Kumi-Kyereme A, Awusabo-Asare K, Darteh EK. Attitudes of gatekeepers towards adolescent sexual and reproductive health in Ghana. *African journal of reproductive health*. 2014 Oct 28;18(3):142-53.
6. Lukumay GG, Mgopa LR, Mushy SE, Rosser BS, Massae AF, Mkonyi E, Mohammed I, Mwakawanga DL, Trent M, Wadley J, Ross MW. Community myths and misconceptions about sexual health in Tanzania: Stakeholders' views from a qualitative study in Dar es Salaam Tanzania. *PloS one*. 2023 Feb 10;18(2):e0264706.
7. Blidaru IE, Furau G, Socolov D. Female Romanian university students' attitudes and perceptions about contraception and motherhood. *The European Journal of Contraception & Reproductive Health Care*. 2016 Jan 2;21(1):39-48.
8. Harmanli O, Ilarslan I, Kirupananthan S, Knee A, Harmanli A. Women's perceptions about female reproductive system: A survey from an academic obstetrics and gynecology practice. *Arch Gynecol Obstet*. 2014;289(6):1219-1223.
9. Akalin A. The effect of a reproductive health course on sexual myths, sexual attitudes and gender perceptions among university students. *Eur J Contracept Reprod Heal Care*. 2022;27(4):330-334
10. Bajwa SK, Bajwa SJ, Ghai GK, Singh K, Singh N. Knowledge, attitudes, beliefs, and perception of the north Indian population toward adoption of contraceptive practices. *Asia Pacific Journal of Public Health*. 2012 Nov;24(6):1002-12.
11. Alomair N, Alageel S, Davies N, Bailey JV. Sexual and reproductive health knowledge, perceptions and experiences of women in Saudi Arabia: a qualitative study. *Ethnicity & Health*. 2022 Aug 18;27(6):1310-28.

12. Sidamo NB, Gidebo KD, Wado YD, Abebe A, Meskele M. Exploring providers' perception towards provision of sexual and reproductive health services for unmarried adolescents in Gamo zone, Southern Ethiopia: a phenomenological study. *Risk Management and Healthcare Policy*. 2021 Dec 7;4883-95.
13. Eshak ES, Sayed SI, Kamel EG, El-Sheref MA. Non-medical predictors for ever and current use of contraceptives among women in Minia, Upper Egypt. *J Public Heal*. 2018;26(6):663-671.
14. Schneider HP, Mueck AO, Kuhl H. IARC monographs program on carcinogenicity of combined hormonal contraceptives and menopausal therapy. *Climacteric*. 2005 Jan 1;8(4):311-6.
15. Thongmixay S, Essink DR, Greeuw TD, Vongxay V, Sychareun V, Broerse JE. Perceived barriers in accessing sexual and reproductive health services for youth in Lao People's Democratic Republic. *PloS one*. 2019 Oct 29;14(10):e0218296.
16. Bui TC, Markham CM, Ross MW, Williams ML, Beasley RP, Tran LT, Nguyen HT, Le TN. Dimensions of gender relations and reproductive health inequity perceived by female undergraduate students in the Mekong Delta of Vietnam: a qualitative exploration. *International Journal for Equity in Health*. 2012 Oct 24;11(1):63.
17. Njuki R, Obare F, Warren C, Abuya T, Okal J, Mukuna W, Kanya L, Askew I, Bracke P, Bellows B. Community experiences and perceptions of reproductive health vouchers in Kenya. *BMC public health*. 2013 Jul 16;13(1):660.
18. Van Gerwen OT, Muzny CA, Marrazzo JM. Sexually transmitted infections and female reproductive health. *Nature microbiology*. 2022 Aug;7(8):1116-26.
19. Alomair N, Alageel S, Davies N, Bailey JV. Factors influencing sexual and reproductive health of Muslim women: a systematic review. *Reproductive health*. 2020 Mar 5;17(1):33.
20. Canton H. United Nations Population Fund—UNFPA. In *The Europa Directory of International Organizations 2021*. 2021 Jul 28 (pp. 283-285). Routledge.
21. Temmerman M, Khosla R, Say L. Sexual and reproductive health and rights: a global development, health, and human rights priority. *The Lancet*. 2014 Aug 2;384(9941):e30-1.
22. Mwakawanga DL, Mkonyi E, Mushy SE, Trent M, Bonilla Z, Massae AF, Lukumay GG, Mgopa LR, Mohammed I, Wadley J, Ross MW. Would you offer contraception to a 14-year-old girl? Perspectives of health students and professionals in Dar es Salaam, Tanzania. *Reproductive health*. 2021 Dec 11;18(1):245.

Knowledge And Perception Of Dysmenorrhea Among Clients Attending The Family Health Hospital.

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Abstract

Introduction: Dysmenorrhea is one of the most common gynecologic disorders that affects women's quality of life and social activities. Although dysmenorrhea is highly prevalent, few women recognize that it is a medical issue and seek medical care.

Aim: The aim of this study was to assess the level of knowledge and perception about dysmenorrhea among clients attending Family Health Hospital, Teshie, Ghana.

Methods: This study was a cross-sectional survey done using a non-probability convenient sampling method. Questionnaire was distributed to clients attending Family Health Hospital who were willing to participate in the research. The data collected was analyzed using Statistical Package for the Social Sciences (SPSS) version 25.0. Categorical variables were analyzed using descriptive statistics, and chi-square test. The statistical significance was set at 0.05.

Mean scores were calculated from correct answers in order to grade participants' knowledge and perception.

Results: Two hundred and thirty clients (148 females and 82 males) participated in the study. Most participants (203, 88.3%) were aware of dysmenorrhea and 192 (83.5%) either had experienced dysmenorrhea or knew someone experiencing dysmenorrhea. Greater percentage of females (57.4%) had high knowledge on dysmenorrhea as compared with males (20.7%). However, greater percentage of both female (66.2%) and male (57.3%) clients had positive perception about dysmenorrhea based on mean score.

Conclusion: The study concluded that, both male and female clients had fairly good knowledge and fairly positive perception about dysmenorrhea. This is the first study on dysmenorrhea including male participants in Ghana and it shows that Ghanaian men are knowledgeable about dysmenorrhea making it easier to include them in making policies concerning dysmenorrhea challenges in females.

Keywords: Dysmenorrhea, gynecology disorder, prevalence, quality of life.

Introduction

Dysmenorrhea, the medical term for painful menstrual periods which are caused by uterine contractions, exists in two forms: primary and secondary.^{1,2} Primary dysmenorrhea is recurrent

and it is usually not due to other diseases.³ The pain normally begins a day or two before a woman gets her period or when bleeding starts. Pain associated with primary dysmenorrhea usually last between 12 to 72 hours and accompanied by other

symptoms such as nausea and vomiting, fatigue and diarrhea.^{2,4} When the menstrual pain is due to a disorder or an infection in the female reproductive organs, it is known as secondary dysmenorrhea.⁵ The pain associated with secondary dysmenorrhea usually begins earlier in the menstrual cycle and lasts longer than a common menstrual cramp.⁵

The prevalence of dysmenorrhea is highest in adolescent females and it is one of the most common health problems in young adolescent girls as it affects 50-90% of the general population.⁵ About 15 percent of adolescent girls report severe dysmenorrhea which is a leading cause of recurrent short-term school absenteeism in adolescent girls.⁶ Globally, the prevalence of dysmenorrhea varies from 20% to 90%.⁶ In Europe and America, the prevalence of dysmenorrhea has been reported to range from 52.4% to 85.7%.^{7,8} The prevalence of dysmenorrhea in India is 62%, and it varies greatly across effecerent populations and ethnic groups.⁸ Various studies in Africa have reported that the prevalence ranges from 58% to 85.4%.⁹⁻¹¹

Dysmenorrhea has an adverse effect on school performance, such as low concentration, school absenteeism, as well as limited participation in sports and social activities.¹² Some consequences of untreated dysmenorrhea may include reduced concentration at work and school leading to less productivity and in most cases, people are not really aware of the changes their body undergoes.¹¹⁻¹³

In Africa, issues concerning menstrual cycle are important but understudied.¹⁴⁻¹⁶ In some part of Ghana, when a woman is in her menstrual cycle, she is not allowed to cook for the husband as she is considered unclean.¹⁶ Most Ghanaian men think dysmenorrhea is something intentionally done to escape sexual activities.¹⁵ As dysmenorrhea is a common problem among women, it is essential that people are aware of the normal and abnormal symptoms of menstruation. It is equally important to persuade women with dysmenorrhea to seek proper medical attention since it is mostly associated with pain. Finding how men also embrace the word

dysmenorrhea is very important in order to give further education so they can support their partners in such situations and in educating their adolescent girls at this stage. To address these gaps, this study aims to assess the knowledge and perception that women and men have about dysmenorrhea in Ghana.

Methods

The study is a cross-sectional survey conducted from 16th November, 2022 to 7th June, 2023. Participants were female and male clients aged 18 years old and above who attended the Family Health Hospital during the study period. A convenience sampling technique was used in this study because of the time frame and nature of the study. Data was collected using anonymous self-administered questionnaires after informed consent was obtained from each participant. The questionnaire was created using Google Forms and contained both open-and close-ended questions which were available in both hard or soft copies. The exclusion criteria were clients who could not read and answer the questionnaire in English by themselves. Section A of the questionnaire comprised demographic characteristics such as sex, age, marital status, religion, level of education of respondents. Section B assesses the level of knowledge and Section C assessed the perception of dysmenorrhea, including questions asked about the symptoms, remedies, causes and attitudes toward dysmenorrhea. Section B and C used Likert scale responses: strongly agree (5), agree (4), neutral (3), disagree (2) and strongly disagree (1). The data collected was limited only to information required for this study. The data was then entered into Excel 2019, cleaned to ensure accuracy and completeness and exported to SPSS version 25 for analysis. Responses from questions on the level of knowledge about dysmenorrhea and the perception of dysmenorrhea were summed and scored based on the number of correct answers chosen based on the scoring scale adopted from Sakkir et al.¹⁷ (Table1).

Table 1 Variable definition

Variable	Definition	Mean score	Scale
Knowledge	Low	0 – 2	Ordinal
	Average	2.1 – 3	
	High	3.1 – 5	
Perception	Negative	0 – 2	Ordinal
	Moderate	2.1 – 3	
	Positive	3.1 – 5	

Adopted from Sakkir et al.¹⁷

Results are presented as frequencies and percentages in graphs, tables and narrations. Ethical approval was obtained from the Ethics Committee of the Department of Community Health, Family Health Medical School (FHUC- EPRC-014/2023)

Results

A total of 230 who met the inclusion criterial responded to the questionnaire. Of these, 148 (64.3%) were females and 82 (35.7) were males. About half (116, 50.4%) were single, 98 (42.4%) were married, 9 (3.9%) had divorced and 7 (3.0%) were co-habiting. The majority of the respondents were Christians (170, 73.9%) ant the rest (60, 26.1%) were Muslims. More than half (125, 54.3%) had had their tertiary education, 95 (41.3%), secondary education and 10 (4.3%) completing only primary school. Most of the respondent (132, 57.4%) were employed, 67 (29.1%) unemployed and 31 (13.5%) were self-employed.

On assessing the level of knowledge on dysmenorrhea, 203 (88.3%) answered that they knew about dysmenorrhea and 27 (11.7%) did not know about dysmenorrhea. Of the 203 respondents who knew about the term dysmenorrhea, 64 (31.5%) heard of it from health workers, 46 (22.7%) from their friends, 77 (38%) from relatives and a few people (7.9%) heard about it on social media.

Regarding differences between male and female participants, almost the same percentage of males as compared with females reported knowing about dysmenorrhea (89% and 87.8%, respectively). Among all participants, 192 (83.5%) had either

experienced dysmenorrhea themselves (37%) or knew someone who had experienced it (Figure 1).

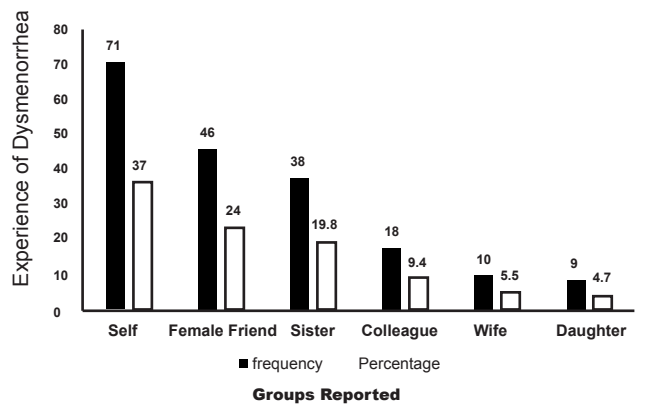


Figure 1 People known to have experienced Dysmenorrhea

Both males and females correctly identified the true symptoms of dysmenorrhea such as headache, fatigue, back pains and nausea/vomiting. However, a few wrongly answered that decreased vision and increased appetite are symptoms of dysmenorrhea (Table 2).

Table 2 Symptoms and remedies of Dysmenorrhoea

Variable	Male (82)	Female (148)
Symptoms		
Headache	50 (61%)	67 (45.3%)
Fatigue	38 (46.3%)	54 (36.5%)
Back pain	30 (36.6%)	52 (35.1%)
Nausea and vomiting	28 (34.1%)	75 (50.7%)
Decreased vision	4 (4.9%)	6 (4.1%)
Increased appetite	2 (2.4%)	4 (2.7%)
Remedies		
Pain relievers	62 (75.6%)	125 (84.5%)
Rest	35 (42.7%)	65 (44%)
Herbal concoction	18 (22%)	43 (29.1%)
Use of heat pads	18 (22%)	41 (27.7%)
Massage	8 (10%)	14 (9.5%)
Use of cold pads	4 (4.9%)	4 (2.7%)
No relief	8 (10%)	4 (2.7%)

On remedies for dysmenorrhea from multiple responses, 187 (81.3%) correctly responded that pain relievers are a remedy for dysmenorrhea (75.6% males and 84.5% females respectively), 100 (43.5%), responded that resting serves as a remedy, with very few (5.2%) participants saying there exist no remedy for dysmenorrhea (Table 1).

Considering the effect of dysmenorrhea on daily activities, 156 (67.8%) answered dysmenorrhea causes lack of concentration, 81 (35.2%) indicated dysmenorrhea causes sleep disturbances while 31 (13.5%) indicated there are various other effects of dysmenorrhea on daily activities.

Although most participants believed medical care was the proper management for dysmenorrhea (figures 2), males and females showed varied perceptions on it causes and management (Table 3).

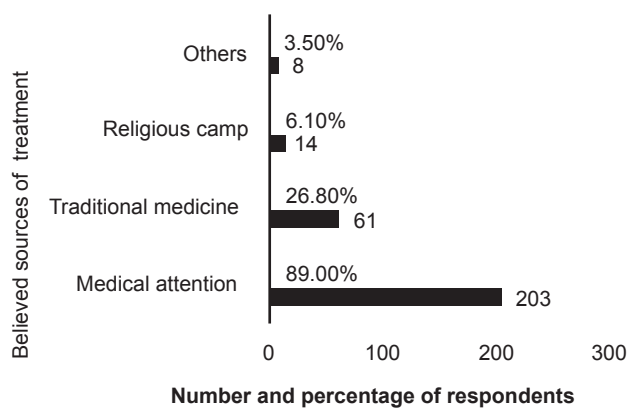


Figure 2 Proper way of seeking treatment for dysmenorrhea

Greater percentage of females, compared to males, believed dysmenorrhea is natural (77% and 53.7% respectively). On the other hand, more males believed misuse of drugs (28%) and abortion (15.8%) cause dysmenorrhea as compared to females (11.5% and 7.4%, respectively).

Table 3 Perception of Dysmenorrhea between male and female participants

Variable	Male (82)	Female (148)
Causes of Dysmenorrhea		
Natural process	44 (53.7%)	114 (77%)
Misuse of drugs	23 (28%)	17 (11.5%)
Abortion	13 (15.8%)	11 (7.4%)
Family curse	2 (2.4%)	6 (4.1%)
Management		
Increased appetite	2 (2.4%)	4 (2.7%)
Medical	66 (79.3%)	138 (93.2%)
Traditional medicine	30 (36.6%)	31 (21%)
religious camp	4 (4.9%)	10 (6.8%)
Others	2 (2.4%)	6 (4.1%)

On seeking treatment, 93.2% of the females as compared to 79.3% of males believed medical attention as the most precise means of management for dysmenorrhea. Also, 36.6% and 4.9% of the males subscribed to other means of treatment such as traditional medicine and religious camps respectively. (Table 3).

Grading mean scores of participants' knowledge and perception¹⁷ shows that more females have higher knowledge (57.4%) and positive perception (66.2%) of dysmenorrhoea than males (20.7% and 57.3% respectively) (Table 4).

Table 4 Score on Knowledge and perception of dysmenorrhea

Variable	Definition	Mean score
Knowledge score		
Low (0 - 2)	10 (12.2%)	28 (19%)
Average (2.1 - 3)	55 (67.1%)	35 (23.6%)
High (3.1 - 5)	17 (20.7%)	85 (57.4%)
Perception score		
Negative (0 - 2)	5 (6.1%)	10 (6.8%)
Moderate (2.1 - 3)	30 (36.6%)	40 (27%)
Positive (3.1 - 5)	47 (57.3%)	98 (66.2%)

Discussion

The study investigated knowledge of both males and females on dysmenorrhea in the Family Health Hospital. To our knowledge, this is the first time males have been involved in a dysmenorrhea study in Ghana. In the current study, both genders exhibit a fairly good (average to high) knowledge about dysmenorrhea (87.8% males and 81% females, respectively). About half (50.7%) of women in the study reported nausea and vomiting as symptoms of dysmenorrhea which is in accordance with previous studies.^{8,18}

The relatively high level of knowledge on dysmenorrhea could be attributed to increase level of education and health programs that focus on menstrual health and have effectively informed clients about the symptoms, causes, and management options for dysmenorrhea. Also, the rise of the internet has significantly expanded access to reliable information, enabling individuals to seek out educational resources at their convenience. Online platforms, including health websites and social media, provide valuable insights and support, fostering a greater understanding of dysmenorrhea among diverse populations.

Greater percentage of females (57.4%) had high knowledge on dysmenorrhea as compared to males (20.7%). This is in accordance with the study done by Oluwole et al., which reported high knowledge of dysmenorrhea among females than males.¹⁹ However, both females (66.2%) and males (57.3%) had positive perception about dysmenorrhea based on mean score. Majority of respondents (77% females and 53.7% males) indicated that dysmenorrhea happens as a result of natural process which agree with previous studies which stated that there exists a significant increase in the risk of dysmenorrhea with family history.^{20,21} Over 64% agreed that dysmenorrhea is associated with loss of concentration, which is in agreement with previous studies which reported that 68.1% of participants indicated dysmenorrhea has a negative effect on concentration.²⁰⁻²² This finding may be as a result personal experience among female participants and told experience among male counterparts by their spouse or female

friends. Also, this study reveals that both males and females suggest dysmenorrhea to have effect on daily activities as reported previously.²¹⁻²²

The study findings show that the majority of participants suggest medical treatment as the most appropriate way of seeking dysmenorrhea treatment or management. This agrees with a study done by Armour et al., where most women were using over-the-counter painkillers as dysmenorrhea remedy.¹² It also reveals fewer women opting for traditional/herbal medicine as a source of remedy for dysmenorrhea, similar to a previous study.²⁴

The strength of this study is that it included male participants which are usually excluded from dysmenorrhea studies. Also, past studies mostly recruited school-going adolescents but this study considered both adult males and females. However, these cohort of male attendants are highly educated, able to afford services in a private hospital and may not reflect the general male population. It is therefore recommended that further studies include males in other communities to have a broader perception of males' knowledge on dysmenorrhea.

In conclusion, the study revealed a high knowledge of dysmenorrhea among both male and female participants in a private hospital in Ghana. It is recommended that future studies include more men so men could have broader understanding of female health issues. The study reveals a positive knowledge and perception of dysmenorrhea for both genders even though males were expected to have negative perception.

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Conflict of Interests

Authors declare no competing interests.

References

1. Kulkarni A, Deb S. Dysmenorrhoea. *Obstetrics, Gynaecology & Reproductive Medicine*. 2019 Oct 1;29(10):286-91.
2. Guimarães I, Póvoa AM. Primary Dysmenorrhea: Assessment And Treatment. *Revista Brasileira de Ginecologia e Obstetricia*. 2020 Aug;42(08):501-7.
3. Al-Husban N, Odeh O, Dabit T, Masadeh. The influence of lifestyle variables on primary dysmenorrhea: a cross-sectional study. *International journal of women's health*. 2022 Apr 13;545-53.
4. Vincenzo De Sanctis M, Soliman A, Bernasconi S, Bianchin L, Bona G, Bozzola M, Buzi F, De C, Sanctis MD, Tonini G, Rigon F. Primary dysmenorrhea in adolescents: prevalence, impact and recent knowledge. *Pediatric Endocrinology Reviews (PER)*. 2015 Dec;13(2):465-73. knowledge. *Pediatric Endocrinology Reviews (PER)*. 2015 Dec;13(2):465-73
5. Deligeoroglou E. Dysmenorrhea. *Annals of the New York Academy of Sciences*. 2000 Apr;900(1):237-44.
6. Margaret A, Manjubala D. Relationship between BMI (body mass index) and dysmenorrhea among adolescents in a college of nursing at Puducherry, India. *Int Res J Med Sci*. 2016;4(3) 4-6.
7. Grandi G, Ferrari S, Xholli A, Cannoletta M, Palma F, Romani C, Volpe A, Cagnacci A. Prevalence of menstrual pain in young women: what is dysmenorrhea? *Journal of pain research*. 2012 Jun 20:169-74.
8. Omidvar S, Bakouei F, Amiri FN, Begum K. Primary dysmenorrhea and menstrual symptoms in Indian female students: prevalence, impact and management. *Global journal of health science*. 2016 Aug;8(8):135.
9. Farotimi AA, Esike J, Nwozichi CU, Ojedian TD, Ojewole FO. Knowledge, attitude, and healthcare-seeking behavior towards dysmenorrhea among female students of a private university in Ogun State, Nigeria. *Journal of basic and clinical reproductive sciences*. 2015;4(1):33-8.
10. Aziato L, Dedey F, Clegg-Lampsey JN. The experience of dysmenorrhoea among Ghanaian senior high and university students: pain characteristics and effects. *Reproductive health*. 2014 Dec;11:1-8.
11. Nooh AM. Menstrual disorders among Zagazig university students, Zagazig, Egypt. *Middle East Fertility Society Journal*. 2015 Sep 1;20(3):198-203.
12. Armour M, Parry K, Manohar N, Holmes K, Ferfolja T, Curry C, MacMillan F, Smith CA. The prevalence and academic impact of dysmenorrhea in 21,573 young women: a systematic review and meta-analysis. *Journal of women's health*. 2019 Aug 1;28(8):1161-71.
13. Chen CX, Carpenter JS, Ofner S, LaPradd M, Fortenberry JD. Dysmenorrhea symptom-based phenotypes: a replication and extension study. *Nursing research*. 2021 Jan 1;70(1):24-33.
14. Ramathuba DU. Menstrual knowledge and practices of female adolescents in Vhembe district, Limpopo Province, South Africa. *Curationis*. 2015 Jan 1;38(1):1-6.
15. Oppong C. Notes on cultural aspects of menstruation in Ghana. *Institute of African Studies: Research Review*. 1966;1984(9):2.
16. Agyekum K. Menstruation as a verbal taboo among the Akan of Ghana. *Journal of Anthropological Research*. 2002 Oct 1;58(3):367-87.
17. Sakkir G, Dollah S, Ahmad J. E-learning in covid-19 situation: Students' perception. *EduLine: Journal of Education and Learning Innovation*. 2021 Mar 8;1(1):9-15.
18. Rakhshae Z. A cross-sectional study of primary dysmenorrhea among students at a university: prevalence, impact and of associated symptoms. *Annual Research &*

- Review in Biology. 2014 May 7;4(18):2815- 22.
19. Oluwole EO, Agha OO, Ogunyemi A, Bakare OQ. Perception and Healthcare seeking practices regarding dysmenorrhea among public secondary school students in Lagos, Nigeria: Prevalence and healthcare seeking practice of dysmenorrhea among secondary school adolescents. Babcock University Medical Journal. 2020 Dec 31;3(2):34-44.
 20. Abazie OH, Oshinyemi TE, Ayanniyi RY. Knowledge and effects of dysmenorrhoea among female adolescents in selected secondary schools in Lagos. African Journal of Midwifery and Women's Health. 2021 Dec 2;15(4):1-0.
 21. Al-Kindi, R., & Al-Bulushi, A. (2011). Prevalence And Impact Of Dysmenorrhoea Among Omani High School Students. Sultan Qaboos University Medical Journal, 11(4), 485-491.
 22. Ameade EP, Amalba A, Mohammed BS. Prevalence of dysmenorrhea among University students in Northern Ghana; its impact and management strategies. BMC Women's Health. 2018 Feb 13;18(1):39.
 23. Wijesiri HS, Suresh TS. Knowledge and attitudes towards dysmenorrhea among adolescent girls in an urban school in Sri Lanka. Nursing & health sciences. 2013 Mar;15(1):58-64.
 - Chen CX, Shieh C, Draucker CB, Carpenter JS. Reasons women do not seek health care for dysmenorrhea. Journal of clinical nursing. 2018 Jan;27(1-2):e301-8.

Achieving Higher Education Autonomy: Growth and Capacity Building in a Private Medical University

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Brief Report

Attaining full autonomy is a transformative journey for any higher education institution, signifying its maturity and capacity to shape its academic destiny independently. For a private health training university, this milestone is particularly profound, as it empowers the institution to innovate in medical education, conduct cutting-edge research, and contribute directly to healthcare solutions. This transition hinges critically on robust growth and capacity building, encompassing academic excellence, faculty development, state-of-the-art infrastructure, and sound governance. This article examines the multifaceted aspects of achieving autonomy for a health training university, emphasising the crucial role of strategic growth and continuous capacity building.

The pursuit of autonomy compels the health training university to ensure the delivery of high-quality and relevant medical education and research independent of external pressures. Autonomy grants the institution the flexibility to design specialised curricula that respond to evolving healthcare needs, invest strategically in advanced medical technologies, and foster a unique research culture.^{1,2} It enables the recruitment of world-class medical faculty and researchers, who are essential for both teaching, research and clinical practice.³ Furthermore, an autonomous health training university is better positioned to establish strong partnerships with hospitals and healthcare providers, thereby ensuring comprehensive clinical training for students and strengthening the national

health system.⁴ This independence is not merely symbolic; it is fundamental to the university's ability to maintain academic rigour, ethical standards, and a commitment to innovation in a rapidly advancing field.

The journey toward autonomy for a private health training university is inextricably linked to the deliberate cultivation of its internal capabilities. One of the primary areas of focus is academic excellence.⁵ This involves developing and refining medical, dental, nursing, and allied health programmes that meet rigorous national and international accreditation standards.⁶ Capacity building here encompasses establishing specialised research centres, securing funding for clinical trials, and fostering a vibrant research environment that encourages both faculty and students to engage in research activities. Simultaneously, faculty development is paramount. Attracting and retaining highly qualified health professionals who possess both academic credentials and extensive clinical experience is critical.⁷ This necessitates competitive remuneration, opportunities for continuous professional development, advanced clinical training, and mentorship in research and publication. According to Guterres et al., the expertise of faculty directly translates into the quality of education and the institution's research output.⁸

Another crucial aspect of capacity building is infrastructure and technology. For a health training university, this means investing in state-of-the-

art labs, simulation labs, advanced diagnostic equipment, and lecture halls.⁹ The integration of digital learning platforms, telemedicine technologies, and electronic health record systems are also vital for preparing students for the future of healthcare. Critically, access to high-quality clinical training facilities, often through affiliations with teaching hospitals or dedicated university hospitals, is indispensable. These facilities provide the opportunity for practical experience necessary for medical students to develop clinical competencies. Finally, robust governance and financial sustainability form the bedrock of autonomy.¹⁰ This involves establishing transparent administrative structures, ethical leadership, and strategic financial planning to ensure long-term viability. Diversifying funding sources beyond tuition fees, through research grants, endowments, and clinical service revenue, is crucial for sustaining growth and investing in capacity building.

Despite the apparent benefits, the path to autonomy and capacity building for a private health training university is fraught with challenges. The high cost associated with health training education, including specialised equipment, laboratory maintenance, and competitive faculty salaries, can be a significant hurdle.¹¹ Talent acquisition is intensely competitive, as top medical professionals are in high demand across clinical practice, research, and academia. Navigating complex and evolving regulatory hurdles set by medical and higher education accreditation bodies requires meticulous planning and continuous adaptation. Furthermore, securing and maintaining high-quality clinical training partnerships with hospitals can be challenging due to the limited availability of placements and the need to align institutional objectives with the demands of clinical practice. Overcoming these

obstacles requires strategic foresight, resilience, and a proactive approach to problem-solving.¹² The experiences of private health training universities that have successfully achieved autonomy offer valuable insights. One of the most important lessons is the necessity of strategic investment in critical areas such as simulation technology, research infrastructure, and faculty training.^{13,14} Partnerships are also key; collaborating with established hospitals, research institutions, and international health institutions and organisations can significantly enhance capacity and provide invaluable resources. Embracing a culture of continuous quality improvement through regular self-assessment, peer review, and feedback mechanisms ensures that the institution remains at the forefront of health training education and research.¹⁵ Above all, visionary leadership that can articulate a clear strategic direction, inspire all stakeholders, and navigate complex regulatory and financial landscapes is indispensable for guiding the institution through its growth trajectory towards full autonomy.

In conclusion, achieving autonomy in higher education for a private medical university is a comprehensive undertaking that demands a relentless focus on growth and capacity building. It is a journey that transcends mere procedural compliance, embedding itself in the very fabric of the institution's academic, operational, and financial structures. By strategically investing in educational excellence, fostering faculty development, building cutting-edge infrastructure, and establishing robust governance, private medical universities can not only secure their autonomy but also elevate the standard of healthcare education and research, ultimately contributing significantly to the well-being of society.

References

1. Al Gharsi AY, Belhaj FA, Nirmala R. Academic autonomy as driving change: Investigating its effect on strategy development and university performance. *Heliyon*. 2024;10(8):e29536. doi:10.1016/j.heliyon.2024.e29536
2. Gade J, Gade S, Miryala RK. Academic autonomy in higher education. *Educ Soc*. 2024;47(2):59-64. Available from: <https://ssrn.com/abstract=4793227>
3. Geletu GM, Adige AY. Accountability system, academic autonomy, and freedom of academia versus pathways to educational excellence in Hawassa University, Ethiopia. *Int J Educ Reform*. 2024;0(0). doi:10.1177/10567879241290191
4. Fitzpatrick PJ. Improving health literacy using the power of digital communications to achieve better health outcomes for patients and practitioners. *Front Digit Health*. 2023;5:1264780. doi:10.3389/fdgth.2023.1264780
5. Tariq M, Ali SA. Quality assurance and its application in medical education. *J Coll Physicians Surg Pak*. 2014;24(3):151-2.
6. Roberts Lyer K, Saliba I, Spannagel J. *University autonomy decline*. 1st ed. London: Routledge; 2022.
7. Khadar A, Kansra P. Empowering excellence: The vital role of faculty development programs in higher education accreditation. 2024. doi:10.4018/979-8-3693-1698-6.ch007
8. Guterres A, Goncalves A, Pereira S. The role of lecturer in improving college quality learning. *Int J Innov Res Sci Stud*. 2025;8:1949-55. doi:10.53894/ijirss.v8i2.5586
9. Aryee GFB, Amodu M, Obeng P. Effectiveness of eLearning programme for capacity building of healthcare professionals: A systematic review. *Hum Resour Health*. 2024;22:60. doi:10.1186/s12960-024-00924-x
10. Ali MA. Autonomizing public universities in Ethiopia: Exploring the potential challenges. *F1000Res*. 2024;13:1416. doi:10.12688/f1000research.157858.1
11. Okoroafor E, et al. An overview of health workforce education and accreditation in Africa: Implications for scaling up capacity and quality. *Hum Resour Health*. 2022;20:37. doi:10.1186/s12960-022-00735-y
12. Sirili N, Frumence G, Kiwara A, Mwangi M, Goicolea I, Hurtig AK. Public private partnership in the training of doctors after the 1990s' health sector reforms: The case of Tanzania. *Hum Resour Health*. 2019;17(1):33. doi:10.1186/s12960-019-0372-6
13. McGaghie WC, Issenberg SB, Cohen ER, Barsuk JH, Wayne DB. Does simulation-based medical education with deliberate practice yield better results than traditional clinical education? A meta-analytic comparative review of the evidence. *Acad Med*. 2011;86(6):706-11. doi:10.1097/ACM.0b013e318217e119
14. Salmi J. *The challenge of establishing world-class universities*. Washington DC: World Bank Publications; 2009.
15. Wong BM, Headrick LA. Application of continuous quality improvement to medical education. *Med Educ*. 2021;55(1):72-81. doi:10.1111/medu.14351

Kartagener Syndrome In A 10-Year-Old Girl

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Background

Kartagener Syndrome is a subset of Primary Ciliary Dyskinesia (PCD), an autosomal recessive inherited disorder. The clinical triad of sinusitis, bronchiectasis,

and situs inversus is diagnostic of the syndrome. Genetic testing is crucial for confirming the diagnosis of primary ciliary dyskinesia.

Keywords: Kartagener syndrome, bronchiectasis, primary ciliary dyskinesia

Case Report

A 4-year-old girl was first seen in our clinic on account of failure to thrive and recurrent cough since birth. She was born preterm by caesarian section on account of antepartum haemorrhage. She was diagnosed with dextrocardia soon after birth.

On examination, she was not cyanosed and not clubbed. Her anthropometric indices were all < 3rd centile. The cardiovascular system was standard, except for the presence of dextrocardia. The abdomen was whole but soft and non-tender, with no masses palpable. There were coarse crepitations in both lung fields. A diagnosis of Kartagener syndrome was made based on the dextrocardia, recurrent cough and failure to thrive.

Echocardiography confirmed dextrocardia as the only abnormality. A Computed Tomography (CT) angiogram of the chest and abdomen showed bronchiectasis of the left lung apex, situs inversus of the abdominal viscera, and dextrocardia, all consistent with the diagnosis of Kartagener syndrome.¹ She began chest physiotherapy to help clear secretions from the airways. She has since been seen on numerous occasions in the outpatient department with recurrent chest infections, sinusitis and otitis media, all managed with oral antibiotics and sometimes expectorants.

Currently, she is in school, but looks small for her age. She is on her weekly chest physiotherapy.

Discussion

Kartagener syndrome is a subset of primary ciliary dyskinesia, an autosomal recessive inherited disease also known as immotile cilia syndrome.^{1,2} Immotile syndrome, also called primary ciliary dyskinesia, is due to ciliary abnormality due to inherited primary structural defects in the cilia. This leads to repeated and chronic lung infections.^{2,3}

Cilia are located on the epithelial surfaces of the respiratory epithelium and in the fallopian tubes and semen. Cilia are more prevalent in the larger airways. The larger airways also have a higher frequency of ciliary beating, known as the beat frequency, which ranges from 1 to 20 Hz. Cilia are finger-like structures extending from the surface of cells into the lumen of airways. Each cell has about 200 cilia on its surface. Cilia beat and move by the sliding motion of microtubules.⁴ This leads to bending and rotating movements which transport mucus towards the mouth. Structural abnormalities of the cilia lead to abnormal beat frequency or immotility, which in turn result in defective mucociliary clearance of airway secretions.

About 50% of patients with ciliary dyskinesia have Kartagener syndrome. The course is variable. In one study, 100% of the children had a productive cough, a hallmark symptom. Lower respiratory tract disease can progress to weight loss and bronchiectasis³. Kartagener syndrome is often undiagnosed in children. The presence of dextrocardia in a child with chronic respiratory tract symptoms is diagnostic of Kartagener syndrome.⁴ Treatment for Kartagener syndrome is symptomatic. Coughing should be encouraged. Chest physiotherapy helps clear mucus from the airways. Antibiotics are prescribed for evidence of infection of the sinuses or lower airways. Oral antibiotics are usually effective, as in our case. Bronchodilators are helpful for symptomatic wheezing.

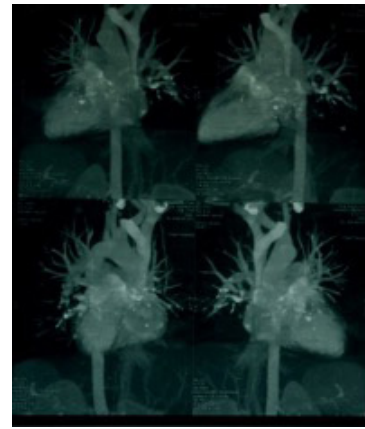


Figure 1 Radiological Scan of condition

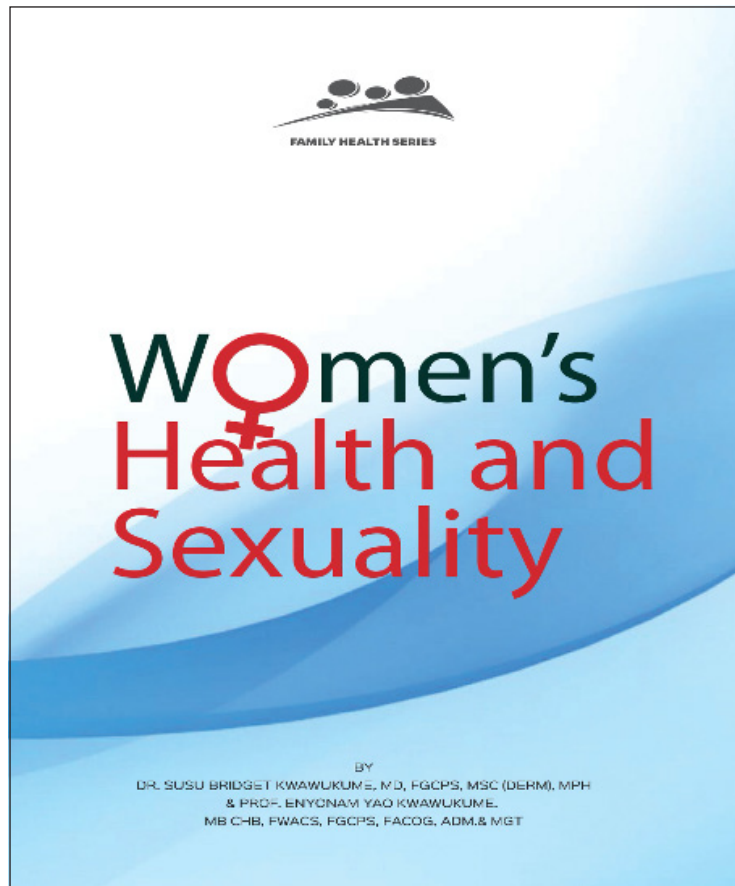
References

1. Takeuchi K, Kitano M, Ishinaga H, Kobayashi M, Ogawa S, Nakatani K, Masuda S, Nagao M, Fujisawa T. Recent advances in primary ciliary dyskinesia. *Auris Nasus Larynx*. 2016 Jun 1;43(3):229-36.6/j.anl. 2015.09.012
2. Rutland J, De Jongh RU. Random ciliary orientation: a cause of respiratory tract disease. *New England Journal of Medicine*. 1990 Dec 13;323(24):1681-4.
3. Narayan D, Krishnan SN, Upender M, Ravikumar TS, Mahoney MJ, Dolan TF, Teebi AS, Haddad GG. Unusual inheritance of primary ciliary dyskinesia (Kartagener's syndrome). *Journal of medical genetics*. 1994 Jun 1;31(6):493-6..
4. Hosie P, Fitzgerald DA, Jaffe A, Birman CS, Morgan L. P rimary ciliary dyskinesia: Overlooked and undertreated in children. *Journal of paediatrics and child health*. 2014 Dec;50(12):952-8.

BOOK REFLECTION

*A Woman has a complex body and sexuality to be understood and cared for.
Reflection from "Women's Health and Sexuality"*

By Dr. Susu Bridget Kwawukume and Prof. Enyonam Yao Kwawukume



The book provides a comprehensive overview of women's health and sexuality.

It highlights the breast's role in nourishing babies, giving comfort, and symbolising womanhood and femininity. The text details breast development and notes that it is common and normal for one breast to be larger than the other, asserting that "nothing like a perfect breast" exists. Breast tissue constantly changes throughout a woman's life, influenced by the menstrual cycle, pregnancy, and the hormonal decline associated with ageing.

The central focus is breast awareness, urging women to know how their breasts usually look and feel, especially from their mid-twenties onward. Regular self-breast examination is the most critical way to detect breast cancer early, which is the most common cancer in females. Risk factors include family history, older age, and aspects of the menstrual cycle such as starting early or experiencing late menopause. Breastfeeding is promoted as the ideal way to convey love and strengthen maternal bonding. Milk production relies on the baby's suckling frequency, not breast size, and the initial watery substance, colostrum, contains essential antibodies and nutrients.

The book also addresses other female specific organs and related issues which could be managed to improve the woman's health and sexuality. It also notes that stress, increasing age, and marital incompatibility are often the actual sources of sexual problems, rather than physical issues like relaxed vaginal outlets. Surgical options like vaginal reconstruction and "tummy tucks" are discussed for those seeking improvement in muscle tone or appearance after delivery. Female hormones regulate the response to drug usage and vary across life stages. During pregnancy, drugs must be selected cautiously because the increased blood volume dilutes medication, and certain medicines can cross the placenta, potentially causing congenital disabilities in the first three months. Although pregnancy as a normal physiological process involving temporary body adaptations, husband's support is very important for normal body adaptation and development of the baby the woman carries in the womb for about 9 months. In the same way, stressful relationships with in-laws can severely depress the pregnant woman.

Finally, the book explores cultural practices like female genital mutilation, the plight of older women suffering in silence with menopausal symptoms like joint pains and hot flashes. The female reproductive system has a profound impact on a woman's health and sexuality. Therefore, understanding it and seeking medical help when needed, could help women live the best of their lives.

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13. References to unpublished communications should be kept in the text and not listed in the list of references.
14. Tables should contain information relevant to findings not a long list of frequency data. Tables should be constructed using the Microsoft Word Table format in columns and rows. Data should NOT be separated with Tabs or spaces. Avoid putting legend/title to Table in the first row of the Table.
15. Figures should be clearly labeled and with appropriate caption. Pie charts containing less than 4 variables should be reported in words in the text. Give figures separate legends. Do NOT include the legend or title in the figure.
16. Clinical and radiological images should be data size- minimized and presented in the JPEG format. They should be clear and sharp.