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EDITORIAL

Welcome to Dunya Journal of Medical Sciences

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It is with great enthusiasm that we announce the launch of the ***Dunya Journal of Medical Sciences***, an online, open-access journal, a pivotal initiative owned by Diabetes Somalia. Our journal is dedicated to the dissemination of high-quality, original research that propels medical knowledge forward and enhances healthcare practices both in Somalia and around the world.

The healthcare landscape in Somalia presents unique challenges and opportunities. With this journal, we aim to provide a platform for researchers, clinicians, and healthcare professionals to share their findings, insights, and innovations. By doing so, we hope to foster a collaborative environment that encourages the exchange of ideas and drives progress in the medical field.

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Our commitment to excellence is unwavering. We seek to publish research that not only meets the highest scientific standards but also has a tangible impact on patient care and public health. We believe that by highlighting the latest advancements and best practices, we can contribute to the improvement of healthcare systems and outcomes, particularly in underserved regions.

As the editorial team of ***Dunya Journal of Medical Sciences***, we encourage you to engage with the journal - whether as an author, reader, reviewer, or editorial board member (or more than one of these). Please contact us with your ideas and feedback as *DJMS* develops over the coming months and years. You can email the editorial office directly (info@dunyajournal.com). We look forward to your active involvement with ***Dunya Journal of Medical Sciences*** as we embark on this exciting journey.

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RESEARCH ARTICLE

A Qualitative Study on Community Usage of Antibiotics in Mogadishu-Somalia

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Abstract:

***Aim*:** This study examines the knowledge and usage of antibiotics among participants in Somalia. Obtaining antibiotics from pharmacies based on perceived indications is common, driven by self-medication or advice from non-medical sources due to financial constraints.

***Methods*:** The study used qualitative research design and data were gathered primarily through in-depth semi-structured interviews, employing a carefully designed interview guide. Participants were intentionally selected to encompass diverse medical and educational backgrounds, ensuring a comprehensive representation of the community. A total of 20 participants were interviewed, providing a sufficiently robust dataset for analysis.

***Results*:** The study reveals that participants have a basic understanding of antibiotics and use them primarily for treating infections, naming specific examples. Dosage guidance varies, with participants relying on pharmacy salespersons, package leaflets, past prescriptions, or medical advice. Non-compliance with prescribed antibiotic courses is also prevalent. Concerns about the quality of antibiotics in the market are expressed, with participants favouring medicines imported from local markets of exporting countries.

***Conclusion*:** The findings underscore the need for education and awareness campaigns to address knowledge gaps and promote responsible antibiotic use. Improving healthcare access, implementing regulatory measures, enhancing pharmaceutical quality, and properly training pharmacy personnel are necessary to ensure safe antibiotic use and combat antibiotic resistance.

Keywords: Self-medication, antibiotic resistance, Antibiotic use, Somalia.

1. INTRODUCTION

Antimicrobial resistance is a major global health challenge responsible for over 700,000 deaths worldwide [1]. Without effective intervention, it is predicted that by 2050, the cost in terms of lives lost will reach 10 million, with a financial impact of approximately US$100 trillion [1]. To address this issue, antimicrobial resistance has been included as a sustainable development goal and is a key focus of numerous global initiatives led by the World Health Organization (WHO) [2,3]. These initiatives aim to enhance surveillance of antimicrobial resistance through platforms such as the WHO tripartite database WHONET [4], the Advisory Group on Integrated Surveillance of Antimicrobial Resistance (AGISAR), and the Global Antimicrobial Resistance Surveillance System (GLASS) [5].

Improper utilization of antimicrobials, encompassing actions like self-administration, suboptimal dosing, and excessive antibiotic usage, is

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widely acknowledged as a prominent catalyst behind the emergence and dissemination of antimicrobial resistance [6-7]. It is important to note that antibiotic resistance is a subset of antimicrobial resistance, and one of its major contributors is the inappropriate utilization of antimicrobial agents, commonly referred to as antibiotics. The inappropriate use of antibiotics is influenced by a combination of supply and demand factors. On the supply side, issues such as the absence of robust antibiotic regulations, the excessive prescription of antibiotics, and unregulated or unequal access to antimicrobials have been identified as significant factors driving this problem [8-9]. Meanwhile, on the demand side, factors are closely linked to consumers' lack of awareness regarding appropriate antibiotic use and its consequences. Additionally, beliefs, expectations, and personal antibiotic experiences are pivotal in this context [11-12].

The situation in African countries regarding Antimicrobial Resistance (AMR) is extremely dire and difficult to accurately describe due to many countries' lack of regular national surveillance reports on AMR [13]. The high prevalence of infectious diseases in Sub-Saharan Africa (SSA) and the poor hygiene conditions, along with the increasing number of immunocompromised patients, are exacerbating the problem of AMR in the region [13].

Notably, a substantial portion of global antibiotic consumption between 2000 and 2015 occurred in low- and middle-income countries (LMICs), particularly in SSA, primarily due to their high prevalence of infectious diseases. Furthermore, it has been projected that a significant proportion of AMR-related deaths will occur in SSA, primarily due to the region's limited financial resources within the healthcare system [14].

Numerous factors contribute to the development of AMR [15], with the overuse and misuse of antibiotics being the most pervasive and preventable drivers of AMR acceleration [16,17]. Despite efforts to curb antibiotic misuse, an alarming statistic reveals that approximately 50% of antibiotics are prescribed without a prescription on a global scale [18]. In the African context, a recent meta-analysis highlighted that non-prescription dispensing of antibiotics was notably prevalent, accounting for 69% of cases in Sub-Saharan Africa, and this practice was more frequently observed in cases of upper respiratory tract infections and diarrhoea [14].

Somalia faces significant challenges in its healthcare system, including lacking a functional national medicine regulatory authority and a lack of regulation in the private pharmaceutical sector. These issues have contributed to the circulation of substandard imported medicines and the emergence of antimicrobial resistance (AMR) within the country. Moreover, the misuse and overuse of antimicrobial drugs are key factors driving the development of drug-resistant pathogens [18].

Anecdotal evidence suggests that healthcare professionals in Somalia often prescribe antibiotics excessively, sometimes offering them without prescriptions and without providing proper guidance. These practices have fuelled the proliferation of AMR, leading to microbes, including bacteria, parasites, viruses, and fungi, becoming resistant to antimicrobial treatments. Consequently, the efficacy of prescription medicines in combating infections is diminishing, raising the risk of disease transmission, severe illnesses, and even fatalities [18]. In response to these pressing concerns, Somalia took a significant step in 2020 by formulating a national action plan to combat AMR, in collaboration with the World Health Organization (WHO). Although the plan awaits formal endorsement by the Federal Government, it outlines four essential pillars raising Awareness, surveillance and monitoring, Infection Prevention and Control (IPC) And promoting Proper Use of Antimicrobials aimed in addressing AMR effectively [18].

2. METHODOLOGY

2.1. Study Duration

This qualitative research was conducted over the course of one month, from February 1st, 2023, to March 1st, 2023.

2.2. Data Collection Methods

Data were gathered primarily through in-depth semi-structured interviews, employing a carefully designed interview guide.

2.3. Sampling Techniques

The research used purposive and snowball sampling to identify and recruit participants. The target demographic consisted of adult heads of households residing in Mogadishu, Somalia.

2.4. Participant Selection Criteria

Participants were intentionally selected to encompass diverse medical and educational backgrounds, ensuring a comprehensive representation of the community.

2.5. Sample Size

A total of 20 participants were interviewed, providing a sufficiently robust dataset for analysis.

3. RESULTS

3.1. Demographic Profile

The study's participant group had a median age of 37.

Most participants were male, constituting 60% of the sample, and a significant proportion had attained at least a secondary level of education, totalling 75 % of the participants (Table **1**).

4. DISCUSSION

4.1. Theme 1: Knowledge, Indications, and Use of Antibiotics

All participants were familiar with the term "antibiotics," with the majority characterizing antibiotics as pharmaceutical substances employed in the treatment of infections. The participants provided examples of various antibiotics, such as amoxicillin, ampicillin, ceftriaxone, Augmentin, ciprofloxacin, metronidazole, and albendazole. It was observed that all participants obtained antibiotics from a pharmacy by requesting specific medications based on their indications. For instance, if a participant experienced diarrhoea, they would ask for a tablet specifically for that condition, such as metronidazole, which was already associated with treating diarrhoea in the consumer's mind. Additionally, all participants reported personally using or administering antibiotics to a household member.

Female participants indicated that they acquire antibiotics from a pharmacy whenever they experience symptoms of vaginitis, such as itching, Odor, or abnormal discharge, in order to alleviate these discomforts. The majority of participants have reported that they personally or on behalf of their household members administer ceftriaxone or Augmentin when experiencing symptoms of coughing and other respiratory illnesses. Similarly, when children or adults in a household are afflicted with ringworm, albendazole may be employed as a treatment option. Male participants reported a consistent preference for ciprofloxacin as the primary antibiotic when encountering symptoms of dysuria.

Table 1. Sample characteristics.

Variable	N (20)	(%)
Age		
• Median (Min-Max)	37	28-50
Gender		
• Male	12	60
• Female	8	40
Education level		
• Primary	5	25
• Secondary	10	50
• University	5	25
Profession		
• Unemployed	8	40
• Employed	12	60
Household size		
• Median (Min-Max)	7	5-10

4.2. Theme 2: Prescription, Purchase, and Use of Antibiotics

Several sources advising antibiotic use were identified Based on participant responses. These included self-medication or advice from non-medical family members or pharmacy salespersons. Self-medication was found to be very common, with participants relying on their medical experience, often based on previous antibiotic prescriptions. The lack of financial means was the most reported reason for not visiting a health facility when sick. Participants mentioned that they resorted to self-medication, relatives, or healthcare providers outside of the formal healthcare setting due to the high cost of hospital visits. Pharmacy personnel were often the source of medication information, as they were more accessible and affordable.

4.3. Theme 3: Dosage and Duration of Treatment

60% of the self-medicated participants relied on information from pharmacy salespersons and the instructions provided on the medication's package leaflet to determine the appropriate dosage and treatment duration. Meanwhile, another group of participants referred to their past medical prescriptions for guidance. For determining the proper dosage and length of their treatment, the remaining participants opted to rely on the recommendations made by medical prescribers. However, many participants reported non-compliance with antibiotic treatment, opting to discontinue it after experiencing partial relief.

4.4. Theme 4: Quality perceptions of antibiotics available in the market

Every participant voiced significant apprehension regarding the quality of pharmaceuticals readily available in the Somali market. Among these participants, some individuals had direct experience purchasing antibiotics that, in their estimation, proved to be less effective owing to a noticeable reduction in the concentration of the active pharmaceutical ingredient. Moreover, a prominent perception shared among the participants revolved around the origin of medicines imported into Somalia, particularly those from countries like China and India. Many participants believed that these medications were predominantly manufactured for export purposes and, consequently, might not uphold the stringent quality standards desired by consumers in Somalia.

Conversely, participants preferred medicines sourced from the local markets of exporting countries, such as those imported from Turkish markets. They held the belief that these products were better tailored to exporting countries residents' needs and met the expected quality standards, thus instilling greater confidence in their efficacy and safety.

4.5. Theme 5: Antibiotic Risks

Among the participants, a notable observation was the prevalent lack of comprehensive knowledge concerning the potential risks associated with antibiotic use. In fact, a considerable portion of the group appeared to be entirely unaware of the dangers linked to antibiotics. On the other hand, some participants acknowledged that antibiotics could pose risks, but their understanding of these risks remained vague and ill-defined. They struggled to articulate or provide specific details about the potential adverse consequences.

Notably, out of the entire pool of participants, a mere three individuals out of the twenty interviewed demonstrated any familiarity with the term "antibacterial resistance. This term is critical to understanding the broader consequences of antibiotic misuse. Interestingly, participants seemed to possess a greater awareness of antibiotics' advantages and positive aspects than a balanced understanding of their potential risks. This disparity in knowledge underscores the need for increased education and awareness campaigns regarding the responsible use of antibiotics and the associated risks, particularly in the context of public health.

5. DISCUSSION

The participants in our study exhibited a fundamental level of familiarity with antibiotics, primarily recognizing them as pharmaceutical substances utilized for treating infections. Notably, they displayed the ability to name specific antibiotics, indicating a certain level of awareness. The prevalent practice of acquiring antibiotics from pharmacies based on perceived indications reflects self-medication trends within the community. The specific instances provided, such as using metronidazole for diarrhoea or ciprofloxacin for dysuria, shed light on the participants' reliance on antibiotics for addressing distinct symptoms. Furthermore, our findings reveal that female participants frequently seek antibiotics to alleviate symptoms of vaginitis, while household members commonly employ ceftriaxone or Augmentin for respiratory issues. This observation enriches our comprehension of antibiotic usage patterns within the community and has implications for informing healthcare providers and policymakers about prevalent self-medication practices and associated risks. In a similar study conducted in Kinshasa, Democratic Republic of Congo (DRC), it was found that while most participants were familiar with the term "antibiotic," their knowledge about the indications and risks associated with the use of antibiotics was limited. This suggests a need for educational interventions and awareness campaigns to improve antibiotic literacy and promote responsible antibiotic use in the community [19]. Additionally, our study highlights the diverse sources of advice on antibiotic use, including self-

medication, guidance from non-medical friends and family members, and information obtained from pharmacy salespersons. The high prevalence of self-medication is a cause for concern, signalling a lack of professional medical oversight. Financial constraints, leading to the avoidance of healthcare facilities, contribute significantly to this self-medication trend, underscoring the urgent need for improved healthcare accessibility and affordability.

In Somalia, the local pharmaceutical and laboratory sectors have experienced a significant expansion due to their affordability compared to licensed and certified health centres and pharmacies [20]. Furthermore, the prominent role of pharmacy personnel as primary sources of information regarding medications underscores the importance of adequately training and regulating these professionals to ensure the safe use of antibiotics. This theme emphasizes the necessity of addressing financial barriers to healthcare access to reduce self-medication practices. Moreover, our research reveals that self-medicated participants rely on pharmacy salespersons and package leaflet instructions to determine appropriate dosage and treatment duration. This finding underscores the need for providing clearer and more accessible information on antibiotic use. A research investigation conducted in Tanzania revealed that there is a substantial prevalence of non-prescription sales and dispensing of antibiotics [21]. Additionally, the widespread issue of non-compliance with prescribed antibiotic treatments is a cause for alarm, as it implies the potential for inadequate treatment outcomes and the development of antibiotic resistance. In addition, our study emphasizes the importance of healthcare providers prioritizing patient education on proper antibiotic usage, with a specific emphasis on completing prescribed courses. This theme underscores the need for targeted educational interventions in healthcare settings. Furthermore, participants in our research express substantial concerns about the quality of antibiotics available in the Somali market. Their apprehensions regarding the quality of imported medications, particularly from countries like China and India, reflect a lack of trust in the pharmaceutical supply chain. Conversely, their preference for medicines imported from local Turkish markets underscores the significance of trust and familiarity in making medication choices. A study conducted by UNICEF in 2012 revealed that most pharmacies in Somalia did not check the quality of the pharmaceutical products they procured. Quality assurance checks were minimal, with pharmacy workers limited to confirming correct brand names and overall positive impressions. This lack of regulation has detrimental consequences, as over-the-counter medications obtained from these pharmacies can be ineffective or even dangerous. Somalia has also become a dumping ground for expired and falsified medications, further exacerbating the problem [20]. Efforts to enhance the quality of pharmaceuticals in the local market and build consumer trust are imperative in addressing these concerns. Regulatory measures and quality assurance initiatives play a pivotal role in achieving this goal. Additionally, our research highlights the limited awareness among participants about the potential risks associated with antibiotics, including antibiotic resistance. The practice of dispensing antibiotics without a prescription is a serious concern for public health as it contributes to the overconsumption of antibiotics, which in turn fosters the emergence of antimicrobial resistance. The unrestricted availability of antibiotics within communities has been well-documented as a significant contributing factor to the development of antimicrobial resistance [21].

The fact that only a small fraction of participants was familiar with the term "antibacterial resistance" underscores the urgent need for public health campaigns aimed at raising awareness about the consequences of antibiotic misuse. The participants' greater awareness of the benefits of antibiotics compared to their understanding of the risks highlights a critical gap in knowledge. Finally, the discussion of these findings highlights the need for multifaceted interventions to address antibiotic usage patterns, including increased education, regulatory measures, improved healthcare access, and efforts to enhance the quality of pharmaceuticals. These measures are essential for promoting responsible antibiotic use and mitigating the risks associated with misuse.

CONCLUSION

In conclusion, this study reveals key insights into antibiotic knowledge and usage among Somali participants. They showed a basic understanding of antibiotics, using them primarily for infections and naming specific examples. Obtaining antibiotics from pharmacies based on indications is common, driven by self-medication or advice from

non-medical sources due to financial constraints. Dosage guidance varies, with reliance on pharmacy salespersons, package leaflets, past prescriptions, or medical advice. Non-compliance with antibiotic courses is prevalent. Concerns about antibiotic quality exist, favouring exporting countries local market intended products. Importantly, participants have limited awareness of antibiotic risks, including resistance. This underscores the need for education and awareness campaigns.

Addressing antibiotic knowledge gaps, promoting responsible use, and improving healthcare access is crucial. Regulatory measures, pharmaceutical quality enhancement, and proper pharmacy personnel training are essential. Multifaceted interventions are necessary to ensure safe antibiotic use and combat antibiotic resistance.

AUTHORS' CONTRIBUTIONS

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

ETHICAL APPROVAL

The Ethical review board of Horseed International University has reviewed and approved this study

CONSENT FOR PUBLICATION

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CONFLICT OF INTEREST

The author confirms that this article's content has no conflict of interest.

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REVIEW ARTICLE

The State of Stroke in Somalia: Scoping Review

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Abstract:

***Background*:** Stroke is a leading cause of death and disability globally, with limited data available on its burden in Somalia. Stroke presents a significant public health concern in Somalia. This scoping review aims to map the existing literature on stroke including stroke, risk factors, prevalence, and challenges of stroke care in Somalia, identifying knowledge gaps and informing future research directions.

***Methods*:** A systematic search of electronic databases (*e.g.*, Google Scholar, PubMed, MEDLINE, Embase) was conducted using relevant keywords related to stroke and Somalia. Inclusion criteria encompassed studies reporting on stroke epidemiology, risk factors, presentations, diagnosis, treatment, or outcomes in a Somali population.

***Results*:** The review identified limited number of studies investigating stroke in Somalia. Almost all studies were conducted in single centers. There were no nationwide studies on stroke in the country. The majority of the studies focused on stroke prevalence, presentations, risk factors, and outcomes. Studies reported a high prevalence of stroke, with higher rates of hemorrhagic stroke compared to global average. The study identified major stroke risk factors included Hypertension, diabetes mellitus, hyperlipidemia, substance abuse, cardiac abnormalities, and previous stroke/TIA. Limited access to healthcare and delayed diagnosis were highlighted as significant challenges. Challenges of stroke care in Somalia is multifactorial including Limited access to healthcare, Scarcity of advanced imaging technique, and lack of public education about stroke symptoms and risk factors.

***Conclusion*:** This scoping review identified a limited body of research on stroke in Somalia. Existing studies suggest a significant stroke burden with unique characteristics. Further research is warranted to understand the specific epidemiology, risk factors, and optimal management strategies for stroke in the Somali context. This knowledge is crucial for developing targeted interventions and improving stroke care in Somalia.

Keywords: Stroke, Burden, Disability, Risk factors, Somalia.

1. INTRODUCTION

A stroke is a clinical condition characterized by rapidly emerging symptoms or signs of focal loss of cerebral function, with no other obvious cause than vascular origin. However, the loss of function can occasionally be extensive, such as in patients with subarachnoid hemorrhage and prolonged coma. Symptoms could be life-threatening or may persist for longer than 24 hours [1]. Stroke is a major global cause of death and disability, particularly among the elderly. Stroke is the second most common cause of death globally and the third leading cause of disability. It is a major contributor to dementia and depression [2]. Stroke occurs when there is a sudden death of some brain cells due to lack of oxygen, typically caused by a blocked or ruptured artery interrupting blood flow to the brain [3]. There are generally two types of strokes: ischemic strokes and hemorrhagic strokes. Ischemic strokes make up 85% of cases, while

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hemorrhagic strokes make up the remaining 15%. Ischemic strokes are further categorized into five types by the Trial of Acute Stroke Treatment (TOAST): 1) large-artery atherosclerosis, 2) cardioembolic, 3) small-vessel occlusion, 4) stroke of other determined etiology, and 5) stroke of unknown etiology. Hemorrhagic strokes are divided into two types: subarachnoid hemorrhage and intracerebral hemorrhage [4, 5]. Low and middle-income countries account for 70% of stroke cases, 87% of stroke-related deaths, and 90% of disability-adjusted life years worldwide [6]. In countries with high incomes, the incidence of stroke has decreased by 42% over the past few decades. On average, stroke leads to more deaths in low- and middle-income countries than in high-income countries, and it occurs 15 years earlier in these nations [7]. In recent decades, there has been a rise in stroke-related deaths and disability-adjusted life years (DALYs) (refer to Table **1**). Hemorrhagic strokes make up almost half of the global burden of stroke in terms of both mortality and DALYs, even though ischemic strokes are more common [8-10].

The rates of death and disability related to stroke are increasing in Africa, especially in sub-Saharan Africa, where the impact is higher compared to high-income countries. Africa experiences an annual stroke incidence rate of up to 316 per 100,000 people, which is one of the highest rates in the world. In their fourth or fifth decades of life, a significant number of Africans experience strokes, which have harmful effects on individuals, families, and society as a whole. Majority of stroke risk factors in Africa are modifiable. Hypertension is the most Common risk factor, but others include diabetes, heart diseases, physical inactivity, and substance abuse [11. 12].

Stroke is a significant public health issue in Somalia. Despite limited data, studies suggest it might be the second most prevalent cause of mortality, following ischemic heart disease. Interestingly, research studies indicate a higher prevalence of hemorrhagic stroke in Somalia compared to other countries (33.2% vs. a global average of 20%) [13]. The most common risk factors for stroke in Somalia are similar to other parts of Africa, with hypertension and diabetes topping the list. There's a scarcity of data on stroke in Somalia, making it difficult to get a complete picture of the situation.

This article reviews comprehensively the current state of stroke in Somalia, including its prevalence, risk factors, stroke types, and challenges in stroke management in Somalia.

2. RISK FACTORS FOR STROKE IN SOMALIA

Identifying specific risk factors for stroke in Somalia is challenging due to limited epidemiological data and healthcare infrastructure. However, based on broader trends in sub-Saharan Africa and considering Somalia's socio-economic con-

Table 1. Absolute number of DALYs, deaths, incident, and prevalent cases of ischemic and hemorrhagic stroke (with 95% uncertainty intervals [UIs]) in the world in 1990 and 20135.

Parameter	1990	2013
Ischemic stroke		
Deaths	2,182,865 (1,923,290–2,430,872)	3,272,924 (2,812,654–3,592,562)
Incidence	4,309,356 (4,118,103–4,531,909)	6,892,857 (6,549,814–7,352,226)
Prevalence	10,045,202 (9,643,525–10,453,439)	18,305,491 (17,767,372–18,920,736)
DALYs	34,155,606 (29,592,196–38,325,866)	47,424,681 (40,537,540–52,211,800)
Hemorrhagic stroke		
Deaths	2,401,930.40 (2,109,380.2–2,669,117.5)	3,173,951 (2,885,717–3,719,684)
Incidence	1,886,345 (1,816,991–1,976,659)	3,366,175 (3,199,978–3,543,213)
Prevalence	3,891,158 (3,769,541–4,019,014)	7,363,457 (7,139,691–7,616,146)
DALYs	55,953,376 (49,881,127–62,161,971)	65,454,194 (59,497,415–74,654,738)

Abbreviation: DALYs, disability-adjusted life-years.
Note: Data from Feigin *et al.* Neuroepidemiology. 2015;45(3):161–176. doi:10.1159/000441085

text, the most common risk factors for stroke in Somalia are similar to other parts of Africa. In a study conducted by Sidow No *et al.* [13], diabetes was found to be the cause of 80.4% of ischemic stroke cases, with hypertension accounting for 61.4% of cases. Conversely, high blood pressure was the leading risk factor for hemorrhagic stroke, accounting for 38.6% of cases, followed by diabetes mellitus, which accounted for 19.6% of cases. According to another study by MS Hassan *et al.,* hypertension was the most common risk factor among patients 121(57%), followed by hyperlipidemia 73(34%), diabetes 65(31%) mellitus, heart disease 9(4.2%), and previous stroke/TIA 16(7.5%) [14]. Despite limited data, the available literature shows that hypertension, diabetes, hyperlipidemia, substance abuse, prior history of stroke/TIA, and heart disease are the most common risk factors in Somalia, respectively. Cardiovascular abnormalities are a major factor in stroke-related deaths, particularly in people who have experienced acute ischemic stroke. In acute ischemic stroke, cardiac abnormalities can lead to a stroke through an embolic event. Ischemic stroke is primarily caused by a thrombotic or embolic event, with emboli often originating from the heart. To improve the prognosis of patients following acute ischemic stroke and reduce their chance of developing CVD in the future, it is therapeutically necessary to identify and treat risk factors for future CVD early on [15-18]. According to MS Hassan *et al.* [19], study, a higher percentage of cardiac anomalies was found in patients with ischemic stroke who were hospitalized at a multidisciplinary hospital in Somalia. In order to fully comprehend the distinct stroke risk factors in Somalia, additional research is necessary. Targeted preventive measures can be implemented once the stroke risk factors are identified.

3. STROKE TYPES AND PRESENTATIONS IN SOMALIA

There is a lack of comprehensive data on the types and presentations of strokes in Somalia due to insufficient study on the subject. According to a study, in a tertiary care hospital in Somalia, the prevalence of ischemic strokes was66.8% while hemorrhagic strokes was 33.2% [13]. According to this study, Somalia has a greater incidence of hemorrhagic stroke (33.2% vs. 20%) than the global average. The most common ischemic stroke subtype, as identified in the Trial of Org 10172 in Acute Stroke Treatment (TOAST) classification, was ischemic stroke of other identified etiology (28.7%), followed by indeterminate (24.6%) and large artery atherosclerosis (22.1%). Meanwhile, cardioembolic stroke (13.3%) and lacunar stroke (11.3%) were the ischemic stroke subtypes with the lowest frequency. In the emergency department, strokes (or cerebrovascular accidents) can present with various signs and symptoms, depending on the type and location of the stroke. Major presentations are hemiplegia/paresis, conscious impairment, disorientation, dysphagia, aphasia/dysarthria, paresthesia, and sudden headache [20-23]. In one Study in Somalia, the major stroke presentations in the emergency was altered mental status 141 (44%), motor weakness (hemiplegia), 102 (31.8%), seizures 33 (10%), headache 17 (5.3%), vertigo 9 (2.8%), speech impairment 8 (2.5%), acute vision loss 5 (1.6%), involuntary movement 4 (1.2%), and gait impairmentn1 (0.3%) [23, 24].

4. STROKE RELATED MORBIDITY AND MORTALITY IN SOMALIA

Stroke is a leading cause of death and disability worldwide, and Somalia faces a particularly significant burden. Compared to high-income countries, stroke strikes Somalis at a younger age, causing devastating consequences for individuals, families, and the healthcare system. The exact prevalence is unknown due to limited data, but it's a major public health concern. The major risk factors for stroke in Somalia mirror those seen globally. Hypertension is the leading culprit, with a high prevalence among stroke patients in Somalia. Diabetes Mellitus is another major risk factor, with a strong association with stroke in Somalia. Other potential contributors include hyperlipidemia, smoking, unhealthy diet, and physical inactivity. Strokes affecting young patients in Somalia is striking problem since it has more profound impact. The loss of productivity and the burden placed on families are more severe compared to strokes in older individuals. According recently published study, the Major causes of hemorrhagic stroke in young adults in Somalia are hypertension cerebral venous thrombosis, substance abuse, arteriovenous malformation, cavernoma, eclampsia, and cryptogenic [28]. In this study, intrahospital mortality was 28% in patients with hemorrhagic strokes. Hematoma volume greater than 30 mL, thrombolytic etiology, brainstem ICH location, substance abuse related

etiology, presence of associated mass effect, low GCS score at admission, high systolic blood pressure at admission, and chronic renal failure were the factors that predicted intrahospital mortality. According to a study by MS Hassan *et al.,* stroke-related mortality in Somalia is a significant public health concern. This is exacerbated by healthcare system limitations, barriers to accessing care, prevalent risk factors, and the impact of humanitarian crises. Data from single-center studies are the only ones that provide information on stroke morbidity and mortality. Most of these studies assess in-hospital deaths, and national research on stroke-related mortality has not been published. In Somalia, the burden of stroke is significant, influenced by various factors including healthcare infrastructure challenges, limited access to medical services, and socioeconomic conditions.

5. CHALLENGES OF STROKE CARE IN SOMALIA

Stroke care in Somalia faces major setbacks due to the country's persistent political instability, inadequate healthcare infrastructure, and resource constraints. Decades of conflict have severely disrupted Somalia's healthcare system, resulting in adequate skilled healthcare professionals, a lack of medical supplies and equipment, and shortage of funding for healthcare services. There are limited hospitals that provide appropriate management for patients with acute stroke.

Currently, there are no established dedicated stroke units in the country. There is no mechanical thrombectomy available for patients with acute ischemic stroke throughout the country. Only certain hospitals or facilities are able to provide intravenous thrombolytic therapy to patients who have had an acute ischemic stroke. The availability of surgical treatment for stroke patients, when indicated, is also challenging due to insufficient of resources and shortage of skilled professionals. Stroke management recommendations/guidelines are only applicable in a limited number of hospitals. The emergency ambulance service is not effective, and patients must rely on alternative modes of transportation to reach to the hospitals. Additionally, the emergency medical services are not developed, which may contribute to prehospital delays. Each of these difficulties significantly harms the outcome of stroke care in the country.

The level of care provided during an acute stroke is a crucial determinant of the patient's outcome. The quality of care significantly affects the outcomes for these patients. For example, prompt initiation of appropriate treatment relies on early diagnosis and rapid identification of stroke symptoms. Timely treatment is vital for reducing the extent of brain damage and improving outcomes. Availability of specialized stroke units are important. These units provide intensive monitoring and standardized care from multidisciplinary teams, including neurologists, neurosurgeons, and rehabilitation specialists. In some cases, surgical treatments such as evacuation of hematoma or placement of a ventricular drain may be necessary. The availability of skilled neurosurgeons and access to surgical facilities are critical for determining the quality of care and subsequent outcomes, which are currently inadequate in Somalia. Additionally, post-acute care and rehabilitation plays a crucial role in assisting patients recover from the disability. Long-term results are impacted by the quality of rehabilitation treatments, such as speech, occupational, and physical therapy [25-27]. Physical rehabilitation after stroke in Somalia faces significant challenges related to healthcare infrastructure, resources, and access.

6. INITIATIVES TO IMPROVE STROKE CARE IN SOMALIA-THE WAY FORWARD

Somalia faces a specific situation regarding stroke compared to other parts of the world. Stroke is a leading cause of death and disability worldwide, and Somalia faces a particularly significant burden. Improving stroke care in Somalia requires a multifaceted approach that focuses on prevention, early diagnosis and treatment, capacity building, and addressing specific challenges. By implementing these strategies and fostering collaboration, Somalia can significantly reduce the burden of stroke and improve the lives of its citizens. This fight requires dedication from the government, healthcare professionals, and the Somali public, but the potential to save lives and improve well-being makes it a worthwhile endeavor.

Special attention should be given to public awareness campaigns because educating the public about stroke symptoms and risk factors is crucial. This empowers people to seek timely medical attention and potentially avoid strokes altogether.

Improving access to healthcare is particular important. This should particularly focus on expanding healthcare facilities, this allows for earlier diagnosis and treatment. Equipping hospitals with CT scanners for rapid stroke diagnosis is essential. While MRI scans might be ideal, their initial cost and ongoing maintenance might be prohibitive.

Training doctors to diagnose stroke, administer appropriate medications (*e.g.* thrombolytic treatment/mechanical thrombectomy or stroke surgical management), and manage complications is crucial. Developing stroke units within hospitals can provide concentrated expertise and resources for stroke patients. These units would ideally have dedicated staff trained in stroke management protocols. By implementing these strategies and fostering collaboration, the burden of stroke can be reduced significantly. All these require dedication from the government, healthcare professionals, and the Somali public, but the potential to save lives and improve well-being makes it a worthwhile endeavor.

CONCLUSION

The review article summarizes existing literature on stroke in Somalia and identify areas where stroke related data is scarce. This could help healthcare professionals and policymakers develop better strategies for preventing, diagnosing, and treating stroke in the country. More research is needed to understand the specific causes and improve preventative measures and treatment options.

AUTHORS' CONTRIBUTIONS

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

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CONFLICT OF INTEREST

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REVIEW ARTICLE

A Narrative Review of the Diabetes Burden in Somalia

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Abstract: Somalia faces a growing yet under-researched burden of diabetes, compounded by conflict and humanitarian challenges. This narrative review explores the current understanding of this public health concern. Limited access to medications, disruptions in healthcare, and a lack of culturally-sensitive education programs pose significant barriers to effective diabetes management. However, examples of successful community-based interventions and collaborations between healthcare facilities and international organizations offer hope. Further research on Somali-specific epidemiology and risk factors, alongside investment in resource allocation, healthcare worker training, and culturally-sensitive education, hold immense potential to improve diabetes outcomes in Somalia. By addressing these critical areas, Somalia can empower individuals with diabetes to manage their condition effectively and work towards a healthier future.

Keywords: Diabetes mellitus, Somalia, Management challenges, Community-based interventions,

1. INTRODUCTION

Diabetes mellitus, commonly referred to as diabetes, is a chronic metabolic disorder characterized by persistent hyperglycemia resulting from defects in insulin secretion or action [1]. This can be caused by either the body's inability to produce enough insulin (type 1 diabetes) or an impaired response of cells to insulin (type 2 diabetes), the latter being the most prevalent form [2]. Diabetes has emerged as a major global health concern, with the International Diabetes Federation (IDF) estimating that 463 million adults (aged 20-79 years) were living with diabetes in 2019, with a projected rise to 700 million by 2045 [3]. This rapid increase poses a significant threat to healthcare systems worldwide, as diabetes and its complications are major contributors to morbidity and mortality [1]. The economic burden is also substantial, with the IDF estimating the global cost of diabetes at $760 billion in 2019 [3]. Understanding the prevalence, risk factors, and impact of diabetes across diverse populations is crucial for developing effective prevention and management strategies.

Somalia presents a unique context for studying the burden of diabetes. The country has a long history of conflict, displacing millions and disrupting healthcare infrastructure [4]. This instability has hampered the collection of reliable epidemiological data on diabetes prevalence [5]. Furthermore, the healthcare system in Somalia remains fragile, with limited access to specialists, medication, and essential supplies [6]. These factors combine to create a challenging environment for both the prevention and management of diabetes, potentially leading to a higher disease burden and poorer health outcomes compared to more stable regions.

Given the limited availability of robust epidemiological data in Somalia, this narrative review aims to explore the current understanding of the diabetes burden in the country. This will be achieved through a systematic synthesis of existing literature, encompassing both quantitative and

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qualitative studies, reports, and relevant data from neighboring countries or the Somali diaspora.

2. THE LOOMING SHADOW: THE GROWING PREVALENCE OF DIABETES IN SOMALIA

Despite the growing global concern over diabetes, epidemiological data on its prevalence in Somalia remains notably scarce. This paucity of data can be attributed to the country's prolonged periods of political instability, economic challenges, and an under-resourced healthcare system, which have collectively hindered comprehensive health surveys and data collection efforts. The limited available studies suggest a rising trend in diabetes prevalence, mirroring the global increase, yet these findings are based on small-scale, often regional studies that may not fully capture the national situation (7). This lack of robust data impedes the development of targeted public health interventions and policies necessary to address and manage the disease effectively within the Somali population. Therefore, there is an urgent need for systematic epidemiological studies to provide a clearer understanding of diabetes prevalence and inform evidence-based health strategies in Somalia.

In the absence of comprehensive data from Somalia, studies from neighboring East African countries with similar demographics and risk factors can provide valuable insights. For instance, Ethiopia, a neighboring nation, reports a significant diabetes prevalence of around 3% [8]. Additionally, research on the Somali diaspora in high-income countries suggests a high susceptibility to developing diabetes, likely due to lifestyle changes and dietary shifts [9]. Extrapolating from these findings and considering Somalia's shared risk factors like urbanization, dietary changes towards processed foods, and limited access to healthcare, this review suggests a potentially substantial but underreported diabetes burden in the country.

Somalia faces several risk factors for diabetes that are likely contributing to the potential burden. Dietary shifts towards processed foods with high sugar and fat content, coupled with decreasing physical activity levels due to urbanization, mirror trends observed globally that contribute to type 2 diabetes. Additionally, genetic predisposition to diabetes may play a role, as studies suggest a higher prevalence among Somali populations [9]. These factors, combined with limited access to healthcare and preventative measures, create a concerning scenario for diabetes management in Somalia.

3. BEYOND NUMBERS: THE HUMAN COST OF DIABETES IN SOMALIA

Due to the limited access to healthcare and diagnostic tools in Somalia, many individuals with diabetes may remain undiagnosed, leading to potentially devastating consequences. Uncontrolled diabetes can significantly impact quality of life, causing complications such as blindness, neuropathy, and kidney failure. A study by Mohamed *et al.* (2014) exploring the Somali diaspora in Sweden highlights the potential human cost, revealing a high prevalence of diabetes-related complications amongst this population [9]. This emphasizes the urgency of addressing the diabetes burden in Somalia to prevent similar negative health outcomes for its citizens.

Diabetes mellitus (DM) significantly burdens daily life, requiring meticulous blood sugar monitoring, dietary adjustments, and medication adherence [1]. Management strategies can impact quality of life, with studies highlighting increased emotional distress and difficulties maintaining social routines [10]. Furthermore, disparities in socioeconomic status and healthcare access can limit medication affordability, jeopardizing glycemic control and potentially leading to sight-threatening retinopathy, neuropathy, and cardiovascular complications [11]. This underscores the need for multifaceted interventions that address not only the biological aspects of DM but also the social determinants of health to optimize patient outcomes.

4. A FRAGILE HEALTHCARE SYSTEM: CHALLENGES IN DIABETES MANAGEMENT

A fragile healthcare system characterized by limited access to facilities and specialists poses a significant challenge to effective diabetes management. This disparity hinders crucial aspects like regular check-ups, specialist consultations for complications, and access to essential medications. Studies have shown that such limitations are associated with poorer glycemic control, increased risk of complications, and ultimately, higher healthcare costs [12]. Therefore, strengthening healthcare infrastructure, particularly in underserved areas, and exploring telemedicine or community-based diabe-

tes education programs are essential steps to improve diabetes outcomes and reduce healthcare burdens.

Somalia faces a significant challenge in managing diabetes due to a shortage of medications and supplies. Disruptions in the supply chain and limited healthcare infrastructure often restrict access to essential medications like insulin, blood glucose meters, and test strips [13]. This scarcity, coupled with food insecurity and a lack of trained healthcare providers specializing in chronic disease management, creates a complex scenario where complications like neuropathy, retinopathy, and kidney failure become more likely [5]. Further research is needed to explore the efficacy of culturally-sensitive interventions and resource allocation strategies to improve diabetes management outcomes in Somalia.

Conflict and displacement pose a substantial barrier to effective diabetes management in Somalia. Internal strife and recurring droughts disrupt access to healthcare facilities and medication supplies, jeopardizing treatment continuity for diabetic individuals [14]. Displaced populations often face challenges securing culturally appropriate food options and maintaining a consistent exercise routine, further compromising glycemic control [15]. This highlights the need for mobile healthcare units, culturally sensitive educational programs, and collaboration with humanitarian organizations to ensure displaced Somalis with diabetes have the resources necessary to manage their condition effectively.

5. BEYOND THE CRISIS: STORIES OF RESILIENCE AND HOPE

Efforts to address diabetes in Somalia combine community-based initiatives with support from NGOs and international organizations. Community health workers facilitate diabetes education programs delivered in Somali languages, promoting self-management strategies like healthy eating and blood sugar monitoring [16]. Partnering with NGOs like World Diabetes Foundation, healthcare facilities can improve access to medications through donation programs and subsidized treatment options [3]. Additionally, international organizations like the International Diabetes Federation provide technical assistance and training for healthcare providers, strengthening diabetes management capacity within Somalia. These collaborative efforts demonstrate the potential for multisectoral approaches to improve diabetes outcomes in conflict-affected settings.

Despite the multifaceted challenges, examples of successful diabetes management in Somalia showcase remarkable resilience. A study by Abdullahi *et al.* (2018) documented the positive outcomes of a culturally-sensitive, group-based diabetes self-management education program in Mogadishu [16]. Participants demonstrated improved knowledge of diabetes and reported adopting healthier dietary practices and increased physical activity. This initiative highlights the potential of community-based interventions to empower Somali individuals with diabetes to effectively manage their condition within the constraints of their environment.

6. A CALL TO ACTION: CHARTING A COURSE FOR THE FUTURE

Somalia faces a significant burden of diabetes despite having a lower prevalence compared to other regions. Studies like the Somali Health and Demographic Survey (2018-2019) indicate a concerning prevalence of around 8.3% for chronic illnesses, with diabetes ranking among the most prevalent [7]. This burden is compounded by the complex challenges faced by both patients and healthcare providers.

Firstly, shortages of medications and supplies, as highlighted by the World Health Organization, restrict access to essential treatments like insulin and blood glucose monitoring tools [13]. This scarcity, coupled with limited healthcare infrastructure, creates a situation where complications from diabetes are more likely. Secondly, conflict and displacement, as documented by Ahmed *et al.* (2014), disrupt treatment continuity and access to culturally appropriate food options, further jeopardizing glycemic control [16].

These findings underscore the urgent need for further research on the specific epidemiology and risk factors of diabetes in Somalia. A deeper understanding of the population demographics and environmental factors influencing diabetes prevalence would be crucial for developing targeted interventions. Additionally, research into the efficacy of culturally sensitive education programs and resource allocation strategies, as explored by Abdullahi *et al.* (2018), can inform the design of

more effective diabetes management strategies in Somalia [4].

Somalia requires increased investment and support from international organizations and NGOs. Programs that address medication access, healthcare worker training, and community-based education hold immense potential to improve diabetes outcomes. Collaborative efforts, as exemplified by the partnership between healthcare facilities and the World Diabetes Foundation, demonstrate the power of a multi-sectoral approach in strengthening diabetes management within Somalia [3]. Investing in these areas can empower Somalis with diabetes to manage their condition effectively and improve their overall well-being.

7. CONCLUSION

In conclusion, Somalia faces a significant yet under-researched diabetes burden, compounded by logistical and humanitarian challenges. Limited access to medications, disruptions in healthcare due to conflict, and a lack of culturally-sensitive education programs pose substantial barriers to effective diabetes management. However, studies showcasing successful community-based interventions and collaborative efforts between healthcare facilities and international organizations provide a beacon of hope. Further research on the epidemiology and risk factors specific to the Somali context, alongside increased investment in resource allocation, healthcare worker training, and culturally-sensitive education, holds immense potential to improve diabetes outcomes in Somalia. By addressing these critical areas, Somalia can empower individuals with diabetes to effectively manage their condition and work towards a healthier future.

AUTHORS' CONTRIBUTIONS

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

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REVIEW ARTICLE

Beyond Khat: A Comprehensive Look at Drug Abuse in Somalia

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Abstract: This review article explores the under-investigated landscape of drug abuse in Somalia, extending beyond the well-documented khat use. It synthesizes existing research on the prevalence, patterns, and risk factors associated with cannabis, heroin, cocaine, misused prescription drugs, and inhalants. The article highlights concerning trends, particularly cannabis use among young males in southern and central regions. Disparities in drug use by age, gender, and geography are explored. The authors posit that socioeconomic factors like poverty, unemployment, and lack of education, coupled with unaddressed mental health issues and the ongoing conflict, create a fertile ground for substance abuse in Somalia. The review emphasizes the urgency for further research to understand the specific context and calls for international cooperation to develop and implement effective interventions for prevention, treatment, and harm reduction.

Keywords: Drug abuse, cannabis, heroin, cocaine, prescription drugs.

1. INTRODUCTION

Traditionally, drug use in Somalia has been centered around khat (Catha edulis Forsk), a plant whose leaves are chewed for their stimulant properties. Consumption of khat has a long history in the region, documented for centuries [1]. Its use is often interwoven with social and cultural practices, particularly among men, serving as a social lubricant for gatherings and a source of alertness for work [2]. It is important to note that the psychoactive effects of khat are milder than many other stimulants, and its consumption patterns often involve social moderation [3].

However, in recent decades, Somalia has witnessed a rise in the use of modern, illicit drugs. Factors such as ongoing conflict, social unrest, and economic hardship have been linked to this increase [4]. These modern drugs, including cannabis, heroin, cocaine, and prescription medications misused for their psychoactive effects, pose a significant threat to public health due to their higher potential for addiction and associated health risks [5].

Somalia faces a growing public health crisis due to the rise of modern illicit drug use beyond the traditional consumption of khat. This paper aims to provide a comprehensive review of this evolving situation. While khat use has cultural significance, the influx of highly addictive drugs like cannabis, heroin, and cocaine poses a significant threat. Understanding the scope of this problem, the factors driving it, and its public health consequences is crucial for developing effective interventions and prevention strategies. This review will move beyond khat to analyze the current landscape of drug abuse in Somalia, informing public health professionals and policymakers about the most pressing issues and potential solutions.

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2. THE LANDSCAPE OF DRUG ABUSE IN SOMALIA

2.1. The Prevalence and Types of Drugs Used

Khat, known locally as qaad or jaad, has a complex history and role in Somali culture. While the exact timeframe is debated, its use likely dates back centuries, with some evidence suggesting the 14th century [6]. Traditionally, khat chewing served as a social activity, bringing people together for conversation and bonding, particularly in male-dominated spaces [7]. It was also associated with heightened alertness and focus, sometimes used by Sufi mystics and during periods of work or travel [6].

However, current trends in Somalia paint a more nuanced picture. Khat use has become widespread, particularly in urban areas, with concerns about its potential negative impacts. The economic burden of khat imports can strain household finances, and some argue its stimulating effects hinder productivity [8]. Additionally, excessive or prolonged khat chewing can lead to health problems like insomnia, anxiety, and even psychosis [7]. The debate surrounding khat reflects its deep cultural roots intertwined with modern realities. Balancing tradition with public health concerns remains a challenge, requiring further research and open dialogue to navigate khat's place in Somali society.

While khat dominates Somalia's drug landscape, there's a concerning presence of other illicit substances. Cannabis, often referred to as "weeds" or "hash", appears to be the second most common illicit drug, with studies suggesting use rates around 10%, particularly among young men in the south-central regions [9, 5]. Heroin and cocaine use seem less prevalent but are documented, especially in urban areas of Mogadishu [5]. There are also reports of misuse of prescription drugs like tramadol, pregabalin, and pethidine, often obtained illegally, and inhalants like glue abused by street children [5].

Disparities in drug use exist across Somalia. Age plays a role, with adolescents and young adults being more susceptible [5]. Research suggests a higher prevalence of cannabis use in southern and central regions compared to the north [9]. Gender also presents a gap, with drug use being predominantly a male issue due to cultural norms.

Somalia's social and political realities likely contribute to drug abuse. Poverty, unemployment, and lack of education, particularly among youth, create fertile ground for escapism through substances [10]. Mental health issues like depression and PTSD, often undiagnosed and untreated due to limited resources, can also lead to self-medication with drugs [11]. Furthermore, the ongoing conflict and displacement can disrupt social structures and increase feelings of hopelessness, further fueling substance abuse [10].

3. THE IMPACT OF DRUG ABUSE IN SOMALIA

3.1. Public Health Consequences

A complex interplay exists between drug abuse and several negative health outcomes. Firstly, drug abuse, particularly intravenous drug use, significantly increases the risk of contracting infectious diseases. Sharing needles and syringes facilitates the transmission of blood-borne pathogens such as Hepatitis C virus (HCV), Hepatitis B virus (HBV), and Human Immunodeficiency Virus (HIV) [12]. Furthermore, drug-induced immunosuppression can render individuals more susceptible to opportunistic infections, worsening existing health conditions [13]. Secondly, a bidirectional relationship is observed between drug abuse and mental health issues. Drugs of abuse can directly alter brain chemistry, leading to the development or exacerbation of mental health disorders such as anxiety, depression, and psychosis [14]. Conversely, individuals with pre-existing mental health conditions may be more prone to self-medicate with drugs, perpetuating a cycle of abuse [15]. Finally, drug abuse significantly increases the risk of accidents and injuries. The intoxicating effects of many drugs impair coordination, judgment, and reaction time, making individuals more likely to be involved in motor vehicle accidents, falls, and other unintentional injuries [16]. This highlights the critical need for comprehensive public health interventions that address drug abuse not only as an isolated issue but also within the context of its broader impact on physical and mental wellbeing.

3.2. Social and Economic Costs

Drug abuse in Somalia, beyond the well-documented presence of khat, has a demonstrably detrimental impact across societal spheres. At the family level, research suggests a correlation be-

tween substance use and domestic violence, neglect of child care responsibilities, and increased financial strain due to diverted resources towards drug acquisition [9]. Communities experience a breakdown in social cohesion as drug use can lead to increased public disturbances, petty crime to fund habits, and a decline in trust among residents [5]. The economic impact is multifaceted. Lost productivity due to absenteeism or impaired work performance from drug use creates a burden on businesses and hinders overall economic growth [9]. Additionally, a rise in crime associated with drug trafficking and addiction creates a need for increased law enforcement spending, further straining national resources [10]. Studies like "The consumption of khat and other drugs in Somali combatants" highlight the link between drug use and violence, potentially exacerbating existing conflicts and hindering peacebuilding efforts [17]. These social and economic consequences necessitate a multi-pronged approach that includes public health interventions, improved access to mental health services, and community-based support programs to mitigate the far-reaching effects of drug abuse in Somalia.

3.3. Children and Youth

Children and youth in Somalia exhibit a heightened vulnerability to drug abuse due to a confluence of biological, psychological, and social factors. The developing brain, characterized by heightened neuroplasticity, is particularly susceptible to the neurotoxic effects of illicit substances, potentially leading to long-term cognitive impairments, including deficits in memory, learning, and decision-making [18]. Furthermore, adolescents grapple with heightened emotional reactivity and a propensity for risk-taking behaviors, increasing their susceptibility to peer pressure and experimentation with drugs [19]. Socially, children from disadvantaged backgrounds marked by poverty, unemployment, and lack of educational opportunities are more likely to turn to substances for solace or to numb emotional distress [20]. The disruption of social structures and family cohesion caused by ongoing conflict and displacement further exacerbates these vulnerabilities, creating an environment conducive to substance abuse among young people [21]. The consequences of drug use on this demographic segment are particularly devastating. Illicit substances can hinder brain development, leading to academic underachievement and school dropout, jeopardizing future socioeconomic prospects [22]. Furthermore, drug use can exacerbate mental health problems like depression and anxiety, creating a vicious cycle that perpetuates substance abuse [23]. Additionally, children and youth who use drugs are at heightened risk for engaging in risky sexual behaviors and contracting infectious diseases like HIV/AIDS [24]. Therefore, addressing drug abuse among children and youth in Somalia necessitates a multi-pronged approach that tackles not only the supply and demand of illicit substances but also fosters social and economic opportunities, strengthens mental health services, and promotes positive youth development initiatives.

4. ADDRESSING DRUG ABUSE IN SOMALIA

Somalia faces a multitude of challenges in tackling drug abuse. Limited resources and weak infrastructure significantly hinder effective interventions. A 2020 report by the Ministry of Women and Human Rights Development highlights the lack of dedicated treatment facilities and trained personnel, particularly for youth in street situations who are highly vulnerable to substance abuse [10]. Furthermore, the fragile healthcare system struggles to provide adequate support for mental health conditions, which are often co-occurring with drug use [25]. Social stigma surrounding drug abuse creates a further obstacle. Studies suggest a reluctance among individuals to seek help due to fear of judgment and exclusion by family and communities [9]. This stigma also hinders open discussions about drug use, hindering preventative measures.

Despite these challenges, existing interventions offer a glimmer of hope. The Ministry of Health has implemented some prevention programs, including school-based initiatives to educate youth about the dangers of drugs [26]. Additionally, a limited number of NGOs operate treatment centers and harm reduction programs, such as needle exchange for those using injected drugs [26]. However, these efforts are fragmented and lack the necessary funding and scalability to create a substantial impact.

Moving forward, a comprehensive approach is crucial. Increased investment in healthcare infrastructure and personnel training is essential to establish accessible treatment facilities and mental health services [9]. Furthermore, collaborative efforts are needed between government agencies,

NGOs, and community leaders to destigmatize drug abuse and promote open dialogue. Research into the prevalence and patterns of drug use, particularly among specific demographics and regions, is also critical to tailor interventions effectively [10]. Finally, fostering a culture of social support and providing alternative coping mechanisms for vulnerable populations can offer a protective shield against substance abuse. By addressing these challenges and implementing a multipronged approach, Somalia can strive towards a future where drug abuse is prevented, treated effectively, and its harmful consequences mitigated.

CONCLUSIONS

While Khat use remains the dominant concern in Somalia, research suggests a concerning presence of other illicit substances. Cannabis appears as the second most common drug, particularly among young males in the south-central regions, with prevalence rates reaching 10%. Heroin and cocaine use, while less widespread, are documented, especially in urban areas. A critical public health issue emerges with the misuse of prescription drugs like tramadol and pethidine, often obtained illegally, and inhalants abused by street children. These disparities in drug use highlight the need for further investigation, with age and gender playing a significant role. Socioeconomic factors like poverty, unemployment, and lack of education, particularly amongst youth, create a vulnerable population susceptible to seeking solace in substances. Furthermore, the underdiagnosed and under-treated mental health issues like depression and PTSD can lead to self-medication with drugs.

AUTHORS' CONTRIBUTIONS

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

CONSENT FOR PUBLICATION

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CONFLICT OF INTEREST

The author confirms that this article's content has no conflict of interest.

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