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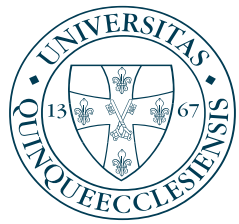

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FOREWORD

Health is a very reliable indicator of the overall living standard of a society. The well-being – or the lack of it – of a nation transcends economic, social and ethnic barriers. In Africa, especially, access to health care is a major indicator of the economic status of a person. Kenya is a perfect example of this stratification of the society, as the minority "haves" can access top, European-level health care services, while the majority "have-nots" end up in a vicious cycle of juggling between sub-standard health care services and inadequate information on prevention and lifestyle choices. The result is that while the narrow upper class of society enjoys close-to-European levels of life, the large middle- and lower layers struggle to make their ends meet on a daily basis, crippled by chronic and often fatal illnesses (hypertension, cardiovascular diseases, cancer). Illnesses that are part of our daily lives in the developed world.

The paper co-authored by Peter Mokaya, Gabriella Hideg and István Ágoston brilliantly touches upon the ever-increasing presence of the so-called "civilization diseases" in Kenya. In a country where 100 years ago hypertension, diabetes, cancer was unheard of, today's modern, urban and ultra-capitalistic lifestyle has introduced all the diseases that us, Europeans have been acquainted with it for over a century. The researchers have confirmed a hypothesis that unfortunately many feared would be true: the spread of cardiovascular diseases (CVD) do not only affect the individual but puts financial strain on the whole family and household. More needs to be done on a macro level by the Kenyan government to halt this new pandemic: focus should be on prevention, as prevention is most effective and economical way of battling CVDs.

Access to health care also determines the standard of living experienced by the individual, especially in rural communities across Africa. The team of researchers studying antenatal care for pregnant women in Marsabit county in Kenya came to the conclusion that the closer the medical facility, the more likely women living in pastoralist societies will frequent them. There is also a positive correlation between pregnancy-related illnesses (diabetes, anaemia) and distance travelled to an ANC facility. The authors give recommendations for installing mobile ANC clinics that would bring the services closer to the communities.

Rose Mose and Anne Achieng Aseey discuss the importance of sports – and of the values and norms instilled in the learner through them – in their paper. They ar-

gue that teamwork, cohesion contributes to performance in team activities, thus generating better results. One of Africa's greatest hindrance to development is the lack of coordinated and disciplined work. Governments, private sector, NGOs and the civil sector all are active on the continent, but often in an uncoordinated manner, each actor vying for individual glory. Sports can teach that teamwork and respect towards each other will result in a higher yield for the whole society!

As Patrick Lumumba Aghan, Grace Nyamongo and Anne Aseey point out in their research paper, sports can also reduce recidivism among women offenders. Sports does not only create team spirit, but through the activity, it improves the physical and mental health of the individual, teaches respect to each other and to rules, regulations, as well as lifts self-confidence, self-worth, that one is capable of more than just being involved in delinquent activities.

The team of outstanding Hungarian and Kenyan researchers featuring in this edition of the Sports and Health Sciences Notebook prove in their works that health care (through prevention or sport) is an indispensable part of Africa's development. It is in this spirit that the Government of Hungary has engaged with the Government of Kenya in the construction and operation of a Comprehensive Cancer Care Centre that will provide early-stage scanning, treatment and post-care services to millions of Kenyan patients.

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ASSESSING ECONOMIC EFFECTS OF CARDIOVASCULAR DISEASES IN URBAN POOR SETTLEMENTS OF NAIROBI KENYA

Abstract

Objective: This study sought to investigate the economic effects caused by cardiovascular diseases (CVDs), especially for patients from the urban poor slums of Nairobi.

Hypotheses: This study tested null hypothesis one which stated that 'There is no relationship between the presence of cardiovascular disease and expenditure pattern at the household level within the informal settlements of Viwandani and Korogocho' while hypothesis two was postulated as out-of-pocket expenditure on treatment of cardiovascular disease does not affect catastrophic spending at the household level within Viwandani and Korogocho settlements.

Materials and methods: This study utilizes a secondary dataset that was extracted from the African Population and Health Research Center's study conducted in 2009. A sample of 2740 individuals over the age of 35 years was analyzed in this study. Household expenditure of 40% and above of its disposable income on the treatment of cardiovascular diseases was marked as catastrophic spending. Multivariate linear regression was conducted to analyze the effects of CVD and other variables in household's income. Determinants of catastrophic expenditure using multivariate logistic regression analysis was also conducted.

Results: Major results indicate that 8.7% to 15.9% of households faced catastrophic expenditure ranging from a threshold of 10% to 40%. Significant results indicate that the presence of cardiovascular disease significantly reduces the household's income by 9%. Households with cardiovascular disease had a 10.3 percentage points higher probability of incurring a catastrophic expenditure compared to households without cardiovascular disease.

Conclusions: It is recommended that adequate preventive measures against cardiovascular diseases be put in place, and treatment made equitable and readi-

ly available. Awareness of the economic and health importance of health insurance should be given to residents of informal settlements.

Keywords: cardiovascular diseases, Kenya, Nairobi, economic effects

Introduction

The global burden of non-communicable diseases (NCDs) is showing an upward trend. Of greatest concern are third-world countries, where the rise in NCDs is compromising the fight against communicable diseases which are already far from meeting global targets. The burden of NCDs prompted the World Health Organization and United Nations to prioritize NCDs control with a bias on major diseases like cancer, diabetes, chronic obstructive pulmonary diseases, cardiovascular diseases, and mental health. Despite these attempts, the epidemiological burden of these diseases is on the rise (World Health Organization , 2018; Feigin et al., 2020).

The mentioned increasing burden of NCDs has negatively impacted the global healthcare system by having an adverse effect on general health and slowing down socio-economic growth in poor countries (Bloom et al., 2014; World Health Organization, 2010). A study conducted by Murray et al. (2012) indicated that NCDs result in 65% of all deaths globally and 54% of all healthy life years lost as measured by disability-adjusted life years.

Projections are showing that NCDs will have a global economic burden of 7 billion dollars over the coming 20 years alone, hence pushing millions of households below the poverty line level if the current trends are not reversed (Bloom et al., 2013; Pierre-Louis et al., 2014). Prevention of NCDs at the international and national levels is still inadequate (Haregu et al., 2015). While Juma et al. (2017) recommend that resources should be invested in a clear health system to reverse the trends, especially in a slum.

There is growing recognition of the increasing and high economic burden of cardiovascular diseases on communities and families in Kenya. In particular, cardiovascular diseases (CVDs) are a major public health concern and are associated with significant economic implications in terms of health care needs, lost productivity, and premature mortality as they are now affecting men and women at their most productive years necessary for nation-building, placing a heavy burden on the Kenyan economy and reducing Kenya's economic growth, as noted by the Ministry of Health's Department of Non-Communicable Diseases (2018).

The government of Kenya (2018) reported that more than three-quarters of global deaths related to CVDs occur in low and middle-income countries. Gaziano (2005) underscores that at least

21 million productive years get lost due to CVDs in Sub-Saharan Africa. On the same trend, diabetes mellitus is projected to double by 2025 (Alberti et al., 2006).

In Kenya, CVDs are the second highest cause of death as it is estimated that 25% of hospital admissions are due to CVDs, and autopsies established that they are the major cause of death in 13% of cases (Ministry of Health Division of Non-Communicable Diseases, 2018; National Council for Population and Development, 2017; Smith et al., 2012).

Different studies have shown that the prevalence of CVDs in the informal settlements of Kenya is increasing at an alarming rate (Joshi et al., 2014; Mathenge et al., 2010). A study by Vlahov et al. (2010) conducted in the slums of Nairobi between 2008 and 2009 found that 20.2% of respondents had hypertension while the rates of diagnosis awareness were 5% and 1.9% for hypertension and diabetes, respectively. This could mean that around three quarters and two thirds of people with hypertension and diabetes respectively would be excluded from self-report surveys.

The cost of illness in the areas of CVD was conducted by several researchers who concluded that the cost is too high for poor households to afford (Lawrence, 2015; Subramanian et al., 2018; Oti et al., 2016). Although records indicate that the average cost of care for CVD patients is higher than $220 per patient, especially for diabetes, Kenya has insufficient funds for the prevention and treatment of CVDs (World Health Organization, 2010). This is compromised by the fact that nearly half of Kenyans live on less than one dollar a day of which the slums are the worst affected (World Health Organization, 2010).

Reviewed literature proves that a number of studies have been done to demonstrate catastrophic expenditure on health (Berki, 1986; Nugent, 2008; Parker and Wong, 1997; Wagstaff and Doorslaer, 2002; Xu et al., 2003). Most studies have clearly shown how the effects of several diseases and conditions can lead households to catastrophic expenditure and impoverishment. Many of these studies have been conducted in Asia. Studies in Kenya cover a combination of diseases on a national scale (Mwai, 2014) and are not specific to CVD.

Although evidence shows that poor households tend to face catastrophic expenditure, no study has been done to assess the extent to which CVDs can affect residents of poor urban informal settlements. This study seeks to bridge this gap and explore the burden of CVDs on health and economy at the household level.

Despite the Ministry of Health in Kenya has developed a 2015-2020 national strategy for the prevention and control

of non-communicable diseases, there is no elaborate cost and budgetary allocation for this program (Ministry of Health, 2015; Mwai, 2014). This study assessed the economic burden posed by cardiovascular diseases at the household level in the slums of Viwandani and Korogocho in Nairobi Kenya.

Objective

Catastrophic expenditure is defined as the inability of a household to pay for health care (Mwai, 2014). Household expenditure equal to or above 10% of disposable income is classified as a catastrophic expenditure (Van de Vijver, 2015). The calculation of catastrophic expenditure was conducted following the guidelines of Xu (2005).

The aim of this research is to investigate the economic impact of cardiovascular diseases on patients living in the urban slum areas of Nairobi, Kenya.

Hypotheses

H1: There is no relationship between the presence of cardiovascular disease and expenditure patterns at the household level within the informal settlements of Viwandani and Korogocho in Nairobi Kenya.

H2: Out-of-pocket expenditure on treatment of cardiovascular disease does not affect catastrophic spending at the household level within Viwandani and Korogocho informal settlements of Nairobi Kenya.

Materials and methods

As earlier stated, this study utilizes data from the African Population and Health Research Centre (APHRC). This study focuses on diabetes mellitus, hypertension, angina pectoris, and stroke. All of these were calculated based on the WHO classifications of cardiovascular diseases (World Health Organization, 2016), and were coded as 1 if CVD was present and 0 if CVD was absent, forming two dummy variables. Location, the procedure of data collection, and method of calculating medical variables of interest are reported in more detail elsewhere (Hulzebosch et al., 2015; Ettarh et al., 2013).

This study used datasets that were mined from the databases of two studies by the African Population and Health Research Centers. One of the studies, titled as "Assessing the linkages between socioeconomic status, perceived personal risk, and risk factors for cardiovascular and related non-communicable diseases in a population of slum dwellers in Nairobi, Kenya-2009", was conjoined with household and amenities data obtained from Nairobi Urban Health Demographic Surveillance System, which is collected quarterly by APHRC between 2002 and 2020.

Any interested researcher can access

these datasets from the micro-data portal found on African Population & Health Research Center website, after duly filling out the study intention form. Access must be approved by the administrator. The researcher followed this procedure and permission was granted.

Results

Data were analyzed using SPSS version 26 and descriptive results were reported as shown in Table 1 below. Table 3 clearly shows that a sample of 2740 individuals over the age of 35 years was analyzed in this study. This sample size was reached after relevant data cleaning. The mean age of the respondents was 49.2 years with a minimum age of 35 and a maximum of 94 while 38% of the total respondents were males. In this study, 41% of the respondents resided in Korogocho while the rest in Viwandani. The descriptive summary also indicates that approximately one-third of the respondents were married. According to the author's calculations, 36.0% of the respondents had less than primary education, 44.1% had primary education, 15.5% had secondary education, 1.4% attained a tertiary education and the remaining did not disclose their education.

In the slums of Viwandan and Korogocho, the mean log of the monthly income of sampled households was 3.970, while the average amount of out-of-pocket expenditure on health was Ksh 363 per household. Approximately 46% of the respondents reported at least one disease in the household, while 39% reported the presence of cardiovascular diseases. According to the calculations in Table 1, 5.1% of households suffered catastrophic expenditure.

Table 1. Descriptive Statistics of the Examined Sample

	N	Minimum	Maximum	Mean	SD
Age of the Respondent	2740	35	94	49.20	9.67
Sex	2740	0	1	0.38	0.49
Slum Area	2740	0	1	0.41	0.49
Marital Status	2740	0	1	0.30	0.17
Education Level	2740	1	4	1.85	0.76
Log of Monthly Income in a Household	2740	3.13	4.59	3.97	0.25
Total Out-of-pocket Expenditure on Health	2740	0	87700	363.14	3227.45
Sickness in a household	2740	0	1	0.46	0.50
Cardiovascular Disease in a Household	2740	0	1	0.39	0.49
Catastrophic Expenditure at 40%	2740	0	1	0.05	0.25

Source: Authors' edition

Following Xu's (2005) recommendation on the calculation of catastrophic expenditure Table 2 shows the results of catastrophic expenditure at different thresholds. Catastrophic health expenditure happens if a household's sum out-of-pocket health payments equals or exceeds a percentage threshold of that household's capacity to pay or non-material expenditure. This threshold can vary according to the specifications of different countries.

Table 2. Catastrophic Expenditure in Households with CVDs

	Catastrophic at 10%		Catastrophic at 20%		Catastrophic at 30%		Catastrophic at 40%	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Non Catastrophic	971	91.3	950	89.4	912	85.8	894	84.1
Catastrophic	92	8.7	113	10.6	151	14.2	169	15.9
Total	1063	100	1063	100	1063	100	1063	100

Source: Authors' edition

In our study, 8.7% of households that recorded CVDs had catastrophic expenditure at 10% of out-of-pocket expenditure share while 10.6% of households that recorded CVDs had catastrophic expenditure share at 20% of out-of-pocket expenditure and 14.2% of households that recorded CVDs had catastrophic expenditure share at 30% of out-of-pocket expenditure. Catastrophic expenditure share at 40% was incurred in 15.9% of households that recorded CVDs.

Table 3. Effect of CVD on Income Expenditure in a household.

Model		Unstandardized Coefficients		Sig.
		B	Std. Error	
	(Constant)	3.846	0.033	0
	Age of the Respondent	0.001	0	.077
	Sex	0	0.009	.988
	Slum Area	-0.148	0.008	0
	Marital Status	0.023	0.024	.336
	Education Level	0.003	0.006	.569
	Household Size	0.035	0.001	0
	Income Generating Activity	0.007	0.016	.686
	CVD in a Household	-0.09	0.009	.003
Dependent Variable: Log of Household Income; α=0.05				

Source: Authors' edition

Results in Table 3 were generated from the guidelines of Equation 1, significant results indicate that the presence of cardiovascular disease significantly reduces the household's income by 9 % and households with a higher number of members have a 3.5% chance of having a higher income. Although not significant, households with income-generating activities and those with married couples registered higher incomes. Although minimal, our results reveal the advancement of age is directly related to the income level. Results indicate that gender has no significant relationship with income levels.

Table 4. Effect of Cardiovascular Diseases on Catastrophic Expenditure

Determinants of Catastrophic Health Expenditure based on equation 1			
	B	S.E.	Sig.
CVD in a Household	0.103	0.292	0
Age of the Respondent	0.006	0.012	.589
Sex	0.184	0.207	.374
Slum Area	0.07	0.192	.715
Marital Status	0.405	0.752	.999
Education Level	-0.005	0.136	.971
Household Size	-0.088	0.033	.008
Income Generating Activity	-0.038	0.34	.001
Constant	2.356	0.822	.004

Dependent Variable= 1 if a household experienced a catastrophic expenditure at ≥40% (out-of-pocket expenditure as a share of total household income). The report indicates significance at 5%.

Source: Authors' edition

Results in Table 4 indicate that the presence of a cardiovascular disease directly impacts a household's susceptibility to catastrophic expenditure. Following Halvorson and Palmquist's (1980) approach to interpreting an equation with binary dependent and independent variables, our results revealed that households with CVD had a 10.3% higher probability of incurring a catastrophic expenditure compared to households without CVD. These results were significant at a 5% level of significance. The results also showed that an increase in household size by one unit decreased the probability of a household incurring a catastrophic expenditure by 8.8 percentage points at a 5% level of significance. Similarly, a household with income-generating activity had a 3.8% lower probability of incur-

ring a catastrophic expenditure compared to those without an income-generating activity. Although not significant, older respondents, males, those who resided in Korogocho slums, and married individuals had a positive susceptibility to experiencing catastrophic expenditure. Advancement in education could lead to lower chances of incurring a catastrophic expenditure within a household.

Discussion and Conclusion

From this study, we conclude that the presence of cardiovascular disease within a household in the informal settlements of Viwandani and Korogocho slums in Nairobi, Kenya, can significantly affect a household's expenditure patterns compared to households without CVDs. These results were consistent with the findings of Kimani et al. (2012), who found that 29% of Kenya's health financing scheme in 2005/2006 was funded out of pocket. Additionally, similar results were found in the study of Van de Vijver (2015), who revealed that over 90% of slum residents in Kenya have out of expenditure on health.

Our results indicate that households with CVDs had 10.3 percentage points higher probability of incurring a catastrophic expenditure compared to households without CVDs. This is similar to the work of Mwai (2014), who found that households in Kenya with non-communicable diseases were 51.35% more likely to experience catastrophic expenditure than those with communicable diseases.

Our study also revealed that the presence of CVDs directly impacts a household's susceptibility to catastrophic expenditure. These results may indicate that households that register CVDs are more likely to suffer economic shocks. These findings were on a similar wavelength to the work of Kimani et al. (2016) who found that out-of-pocket expenditures on health significantly push households into experiencing catastrophic expenditure. In the same argument, Mwai (2014) found that non-communicable diseases, including CVDs, greatly contribute to a household's risk of incurring a catastrophic expenditure. This means that already poor households living in slums are likely to be pushed further into poverty due to the chronic nature of CVDs. Our results are within an environment where several studies have revealed that out-of-pocket payments account for the largest share of healthcare financing. Owing to the fact that out-of-pocket expenditure is an expensive venture, associated households arguably face further economic collapse in an old poor setup (Kimani et al., 2016; Van de Vijver, 2015).

It is essential to maintain continuous communication and cooperation between professionals, so they can share their knowledge and resources (Bársonyné

Kis et al., 2015). While the presence of the disease slows economic growth, Kenya's slums are far from grasping universal health coverage, since past similar studies are showing the same evidence (Buigut et al., 2015).

Policy Recommendations

The reduction in household income due to cardiovascular diseases represents a major risk to the household's welfare. This in turn affects the economy, as the most working class may take sick leave or take off to take care of the ailing household members. It is suggested that adequate preventive measures are put in place to make treatment equitable and readily available, as the economy will be less affected.

The presence of CVDs in a household negatively affects income and pushes vulnerable households further into poverty. In order to stimulate economic growth, work towards achieving universal health coverage and realizing health as a human right under Article 25 of WHO (2015), the Kenyan government should allocate equitable resources to the treatment of CVDs.

Because of the economic benefits of having a healthy population, it is also recommended that cardiovascular-related diseases should be treated free of charge in public health care facilities, especially regarding tertiary and quaternary care.

Residents of the informal community are to be sensitized to the economic and health importance of having health insurance.

Limitations of the Study

This study is limited to a few cardiovascular diseases hence generalizing the results, so it may not be feasible for policies targeting all cardiovascular diseases. Knowledge of households with insurance was not available hence the results may not represent the difference between households with and without health insurance. This study was conducted within two informal settlements in Nairobi and therefore may not be used to generalize the true picture of all slums in Kenya.

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DISTANCE TRAVELED BY PASTORAL PREGNANT MOTHERS TO ACCESS ANTENATAL CARE IN MOYALE SUB-COUNTY, KENYA

Abstract

Objectives: An antenatal clinic is where pregnant mothers are required to seek the service at least four times from early pregnancy to term. To provide adequate antenatal care, a laboratory profile needs to be conducted for all pregnant mothers. Marsabit county is made up of an 80% pastoral community who moves long distances with their livestock from one place to another in search of pasture and water. The aim of this study is to explore the antenatal profile and distance commuted by pastoral pregnant mothers to get antenatal services in Moyale sub-County, Kenya.

Hypothesis: There is a significant relationship between antenatal care (ANC) uptake and the distance traveled by pregnant mothers to seek the service.

Materials and methods: A retrospective laboratory data review of 357 pregnant mothers from eleven mobile villages in Moyale sub-County was conducted between September 2019 to September 2020. Data from the antenatal register were entered into Microsoft Excel and transferred to IBM SPSS 27.0. The mean was calculated for continuous variables, frequency, and proportions for categorical variables, and associative statistics were calculated using *Chi*-square test and

Pearson's correlation.

Results: A total of 357 women entries were reviewed with a mean age of 24.56±5.58 years (range: 13-48), 311 (87.1%) of them were illiterate and 100 (28%) were from Yaballo Godha village. About 228 (64%) of the participants were multigravida and 19 (5.3%) had gestational diabetes. Of the sample that tested positive, 6 (2%) had malaria parasites, 5 (1%) had HBsAg, 1 (0.3%) syphilis, 59 (19%) urine infection, and 38 (11%) showed intestinal infection. The majority of pregnant mothers were blood group 0+ve 152 (42.6%) with 245 (64.7%) showing moderate and 44 (12.3%) severe anaemia. There was a significant relationship between hemoglobin and residence ($\chi2$=51.423, p<0.001) but not age ($\chi2$= 5.341, p=0.501). The number of ANC uptake of the respondents shows a significant relationship with the distance from the village to health facilities ($\chi2$= 19.620, p<0.001).

Discussion and conclusions: Women living closest to health facilities are more likely to visit antenatal care services more frequently. Antenatal laboratory profiling can assist in the early diagnosis of preventable conditions that may affect birth outcomes. Therefore, the County government should provide mobile outreach ANC services at all levels, especially for mobile pastoral communities.

Keywords: Laboratory profiling, Distance, Antenatal clinic, Early diagnosis, Pastoralist

Introduction

Globally, nearly 600,000 women die annually from pregnancy-related complications and over 90% of those deaths are experienced in Asia and Sub-Saharan Africa regions (Lewis, 2008). In Kenya, an estimated 414 women per 100,000 live births die as a result of pregnancy-related complications, childbirth, and lack of care in the ante/postnatal period, making maternal death the leading 27% cause of death among women of reproductive age. Problems of malaria, anaemia, sexually transmitted diseases (STD), HIV/AIDS, and tuberculosis (TBC) have contributed to the high maternal mortality ratio in Kenya (Mason et al., 2015). To provide adequate antenatal care, an antenatal profile test needs to be conducted for all pregnant mothers (Symon, et al., 2016). The purposes of antenatal tests are to screen for and diagnose any existing problems that may affect the mother or baby's health, identify and address problems as they arise, and assess the risk.

An antenatal clinic is a place where pregnant mothers are required to seek health services at least four times from early pregnancy to term. Antenatal care (ANC) is the care given by skilled healthcare professionals to women throughout their pregnancy so that they have a safe preg-

nancy and healthy baby (Tunçalp, et al., 2017). Timely ANC attendance helps to identify pregnancy risks and varieties of potentially fatal conditions such as HIV, malaria, tuberculosis, anemia, Hepatitis B, syphilis, intestinal worms, and Urinary Track Infection (UTI) (Finlayson, 2013; Ronsmans and Graham, 2006; Carroli et al., 2001). The World Health Organization (WHO) recommends that ANC should be initiated within the first trimester of gestation with at least four, and a maximum of eight ANC visits during the pregnancy, and that pregnant women should initiate contact within the first 12 weeks of gestation (Tunçalp, et al., 2017).

Utilization of ANC is lower in low-income countries due to limited access to ANC (Finlayson, 2013; Campbell et al., 2006). A variety of barriers to accessing ANC have been reported in several studies (Moore, et al., 2017; Rurangirwa et al., 2017; Kisuule et al., 2013), sociocultural and psychological barriers included customs of keeping the pregnancy a secret among pastoral communities, reliance on traditional/alternative antenatal practices, the influence of family members, and reluctance caused by poor attitudes of medical staff (Mubyazi et al., 2010; Mrisho et al., 2009; Kabakian-Khasholian et al., 2000). ANC use can also be hindered by a lack of knowledge about ANC and the benefits of attendance as well as unawareness of health facilities that provide ANC (Choudhury and Ahmed, 2011). Additionally, several studies pointed out that the distance to health facilities is one of the major barriers that were raised by the majority of pregnant women in the pastoral community (Moore, et al., 2017; Andrew et al., 2014; Kisuule et al., 2013; Matsuoka et al., 2010).

Kenya adopted the WHO-focused ANC package that promotes interventions that address the most prevalent health issues that affect mothers and newborns (Okoth, 2017). The major goal of focused ANC is to help women maintain normal pregnancies. Antenatal care coverage is only 43% against National coverage of 58% (Nguhiu, et al., 2017) Marsabit county is occupied by an 80% pastoralist community who moves with their livestock from one place to another in the search of pasture and water. To provide adequate antenatal care, the antenatal profile needs to be conducted for all pregnant mothers. However, as a result of adverse climatic change which has made pastoralists more mobile and thus negatively affecting the pastoralist in northern Kenya, has seen pregnant women are unable to access and utilize ante/postnatal care services as per national and international standards.

Despite the importance of distance to health facilities on the access and utilization of ANC, there is no study that has measured the distance and ANC utiliza-

tion among pastoralist pregnant mothers. Therefore, this retrospective study is an attempt to assess the Commuting distance and utilization of ANC by pastoralist pregnant mothers in Moyale Sub County, Kenya. The specific objectives of this study were to assess how distance to an ANC facility influences the number of women's ANC visits and what are the results of the ANC laboratory profile.

Objective

As a broad perspective of the research we would like to determine the outcome of laboratory ANC profiling and distance traveled by pastoral pregnant mothers to seek ANC services.

To determine the distribution of pregnant mothers in Moyale sub-county per person, place, and time. As a specific objective: to determine the distribution of pregnant mothers in Moyale sub-county per person place and time; to determine the ANC laboratory profile picture of pastoralist expectant mothers in Moyale sub-county; to assess how distance to an ANC facility influences the number of women's ANC uptake.

Hypothesis:

H: There is a significant relationship between ANC uptake and the distance traveled by pregnant mothers to seek the service.

Materials and methods

Marsabit County is located in the upper eastern region of Kenya. It borders Ethiopia to the north, Wajir County to the northeast, Isiolo County to the southeast, Samburu County to the southeast, and Turkana County to the west. It covers an area of 70,961.2 km^2 and lies between latitude 10 58'N and 20 1' S and longitude 380 34'E and 410 32'E. The County has four sub-counties namely North Horr, Moyale, Saku, and Laisamis. The total population of the county is 670,000 projected from the 2019 census. 21.3% of this population are women of reproductive age, while children under five account for 5% (KNBS, A. 2010).

A retrospective review was conducted of laboratory antenatal clinic records for all women aged 13 years or older who attended integrated maternal mobile clinic outreach in Moyale Sub-County between September 2019 to September 2020. Some of the variables collected are: age, village, the actual distance from the village to health facilities, number of children and ANC visits, and the result of ANC laboratory test done. Eligible women whose unique identification registry numbers could not be matched to the correct patient file were excluded from the study. Data were cleaned and double entry was checked in Microsoft Excel and then data were transferred to Statistical Package for Social Scienc-

es (SPSS) software version 27 (Illinois, Chicago). Mean and median were calculated for continuous variables, frequency, and proportions for categorical variables, and associative statistics were calculated using the *Chi*-square ($\chi 2$) test of association, and Pearson's correlation was also calculated.

Results

Data were extracted from the main register for a total of 357 pregnant women, with a mean age of 24.56 (standard deviation of ± 5.58 years). Approximately 108 (29.5 %) of women were in the 25-29 age group, of whom 311 (87.1%) (80.0%) cannot read or write. The proportion of women who had at least four ANC visits during pregnancy was 157 (44.0%). With regard to gravidity, 228 (63.9%) of the participants were multigravida and 100 (28.0 %) were from Yaballo Godha village. Approximately 344 (94.0 %) of these mothers travel more than 10km to seek ANC services (Table 1).

Table 1. Demographic Characteristics of Pregnant Pastoral Women (n=357)

		n =35	
Characteristics		**n**	**%**
Age (years)			
Mean (SD)	24.56 (5.58) (13-48)		
<19		78	22
20 - 24		105	29
25 -29		108	30
30 - 34		46	13
35 - 39		21	6
>40		4	1
Literacy level	Yes	311	87
	No	46	13
Number of Children	1	129	36
	2 to 8	228	64
No of ANC attendance	<4	200	56
	>4	157	44
Village	Yaballo Godha	100	28
	Funandimo	81	23
	Qalaliwe	59	17
	Chirach	38	11
	Mansile Water point	22	6
	El-raya	17	5
	Laqi	12	3
	Tesso	11	3
	Er-wede	11	3
	Laqi	12	3
	Qilta	2	1
Actual travel distance to health facilities (KM)	5 to 9.9	13	4
	10 to 14.9	199	58
	15 to 19.9	122	34
	>20	16	4

Source: Authors' edition

Laboratory antenatal profiling of pastoral pregnant mothers

Of the sample processed and tested positive, 6 (2%) were malaria parasites, 5 (1%) HBsAg, 1 (0.3%) had syphilis, 59 (19%) had urine infection, and 38 (11%) showed intestinal infection. The majority of pregnant mothers, 152 (42.6%) had O Rh positive blood groups, with 19 (5.3%) having gestational diabetes mellitus (Table 2).

Table 2. ANC Laboratory test result of pastoral pregnant mothers

Characteristics		**n (357)**	**%**
Hemoglobin Level	<7gm/dl	44	12
	>7-11gm/dl	245	65
	>11gm/dl	68	23
Blood Group	O+ve	152	43
	B+ve	74	21
	A+ve	61	17
	AB +ve	53	12
	O -ve	14	4
	B-ve	2	1
	A-ve	1	0.3
Blood Glucose (n=262)	3-6Ml/l	243	95
	7-12Ml/l	19	5
Hepatitis B (HbsAg)[a]	Positive	5	1
	Negative	352	99
VDRL[b] (Syphilis)	Positive	1	0.3
	Negative	356	99.7
Malaria Parasite	Positive	6	2
	Negative	351	98
Urine for urinalysis	Few Pus cells	23	7
	Moderate pus cells	20	7
	Numerous Pus cells	16	5
	NAD[c]		
Stool for Ova and cyst	Cyst of EH[d]	38	11
	No O/C[e] seen	252	71
	NOT DONE	67	18

[a] HbsAg: Hepatitis B Virus Surface Antigen

[b] VDRL: Venereal Disease Research Laboratory test; Syphilis

[c] NAD: No Abnormality Detected

[d] EH: *Entamoeba histolytica*

[e] O/C: Ova and Cyst

Source: Authors' edition

Classification of Anaemia by age and residence of the respondents

A *Chi-square* test of association was conducted among the study respondents where the hemoglobin categories were the dependent variable, and the results are presented in Table 3. The results show that the hemoglobin status of the respondents was dependent on their residence (X^2 =51.423, p<0.001). Age was not statistically associated with the hemoglobin levels of the respondents (X^2 =5.341, p=0.501).

Table 3. Anaemia classification by age and residence of the study respondents

Characteristics	**Hgb categories (n=357)**				
	Severe [a]	**Moderate [b]**	**Normal [c]**	X^2	p
Villages				51.423	< 0.001
Antut	0	4 (100%)	0		
Chirach	1 (2.6%)	18 (47.4%)	19 (40.0%)		
El-Raya	2 (11.8%)	12 (70.6%)	3 (17.6%)		
Er-Wede	0	11 (100%)	0		
Funandimo	7 (8.6%)	58 (71.6%)	16 (19.8%)		
Laqi	0	12 (100%)	0		
Mansile Water Point	0	21 (95.5%)	1 (4.5%)		
Qalaliwe	1 (1.7%)	48 (81.4%)	10 (16.9%)		
Qilta	0	2 (100%)	0		
Tesso	1 (9.1%)	6 (54.5%)	4 (36.4%)		
Yaballo Godha	0	77 (77.0%)	23 (23.0%)		
Age (years)				5.341	0.501
13-24	4 (2.2%)	136 (76.4%)	38 (21.3%)		
25-34	8 (5.2%)	112 (72.7)	34 (22.1%)		
35-44	0	20 (87.0%)	3 (13.0%)		
45-49	0	1 (50.0%)	1 (50.0%)		

[a] Severe: <7gm/dl; [b] Moderate: >7-11gm/dl; [c] Normal: >11gm/dl

Source: Authors' edition

Factors associated with UTI among the respondents

The number of pregnant women with UTI had a significant relationship with the village where they come from ($p<0.001$), but no significant relationship was noted between UTI and age ($p<0.111$) or literacy level ($p<0.513$) (Table 4).

Table 4. Factors associated with UTI[a] among the respondents

Characteristics	n =375 X^2	*p*
Villages	90.152	< 0.001
Age	14.318	0.111
Literacy	2.299	0.513

[a] UTI: Urinary Tract Infection

Source: Authors' edition

The Pearson's correlation coefficient results show that the number of pregnancies of the respondents increased linearly with age ($p<0.001$). However, a weak inverse relationship was noted between blood sugar level and age ($p=0.004$) (Table 5).

Table 5: Correlation between age and gravida and blood sugar of the respondents

Characteristics	n = 357 Person correlation coefficient (r)	*p*
Gravida	0.915	<0.001
Blood glucose	-0.178	0.004

Source: Authors' edition

The number of ANC uptake of the respondents was showing a significant relationship with the distance pregnant women commute from the village to health facilities (X^2 =19.620, $p<0.001$), but the number of children in the household was not statically significant (Table 6.).

Table 6. Factors associated with four ANC visits among the respondents

Characteristics	X^2	*p*
Distance	19.620[a]	<0.001
Gravida	0.822	0.844

Source: Authors' edition

Discussion and conclusions

Our study investigated the distance traveled by pregnant pastoral mothers to access antenatal service and profiled ANC visits in Moyale sub-county in Marsabit county. This was the first retrospective study to provide a comprehensive assessment of ANC and distance traveled by pregnant mothers in this region. The fourth ANC visit was found to be very low in Moyale sub-county, especially among the mobile pastoralist community. It was found that women's ANC visit was significantly associated with different mobile village.

In Moyale sub-county, the proportion of at least four ANC visits was 801.6 (20%) as per the Marsabit county reproductive maternal newborn child, and adolescent health scorecard of 2017 District Health Information Software 2 (DHIS2). This shows that almost 3206.4 (80%) of these mothers were below the WHO recommendation of having at least four, and a maximum of eight ANC visits during the pregnancy (Lattof, et al.,2020). Women having at least four ANC visits were detected in the Funandimo, Chiracha, and Er-wede villages. The identified areas were located closest to the district hospital which had a laboratory diagnostic department providing antenatal care services. Therefore, women who were living closest to the facilities were more likely to have frequent antenatal care visits, as the services were closer to them.

The number of ANC visits increased with how close the health facilities were as shown in this study. The village closest to health facilities like Tesso which is 8 km from the nearest health facility had more ANC visits compared to Laqi village which was 74 km from the health facilities. Access barriers due to distance also have a negative impact on completing the minimum number of antenatal care visits. Similar results have been found in Cambodia (Sagna and Sunil, 2012) and Kenya (Magadi, et al.,2012). Other studies done by (Mesfin and Farrow, 2017) identified long distances to health facilities as a key factor that affected the up-

take of antenatal care services.

Our study found that the number of ANC uptake of the respondents was dependent on the distance from the villages to health facilities. This finding was supported by a study carried out in Ethiopia established that proximity to a health facility (Tsegay et al., 2013) was significantly associated with the use of antenatal care services. Furthermore, a Northern Indian study found that living far from a health facility was negatively associated with maternal health service use (Bloom et al., 2001). Similarly, distant health facilities were negatively associated with the use of antenatal care services (Fagbamigbe and Idemudia, 2015).

Kenya has witnessed outbreaks of Malaria in its arid Counties of Baringo, West Pokot, and Marsabit. Similarly, few cases of pregnant mothers were diagnosed with the malaria parasite in this study. Results from laboratory profiling show that more than half of the women were anaemic, which aligns with results from other studies in low-to-middle-income countries (Masukume et al., 2015). Detection of anaemia can help identify important maternal risk factors such as nutritional deficiencies, latent infections, and metabolic disorders (Balarajan et al., 2011). Malaria positivity and helminthiasis were noted among pregnant mothers in this study, this is the most possible important determinant of anaemia and hemoglobin level. Other conditions detected are Urinary tract infection (UTI) and gestational diabetes mellitus (GDM) which are associated with adverse maternal and fetal outcomes if not treated on time.

High parity was not significantly associated with higher uptake of ANC, but another study found that high parity was significantly associated with higher uptake of ANC visits (Getasew et al., 2015). This could be attributed to previous complications and adverse pregnancy outcomes. Furthermore, this could be due to influences of previous ANC visits, in case they had. Gestational diabetes mellitus (GDM) is associated with adverse maternal and foetal outcomes which include macrosomia and subsequent delivery risks such as birth trauma and increased need for caesarean delivery in the short term (Crowther et al., 2005), however, a weak inverse relationship was noted between blood sugar level and age in this study.

Conclusion

Moyale sub-county is occupied by an 80% pastoralist community. Even though there is an increase in the use of ANC services within the village's nearest health facilities, the county has not achieved the recommended number of ANC visits. ANC service availability and average distance to the nearest ANC-providing facility were associated with having more ANC visits. Furthermore, there is evidence of a wide geographical vari-

ation in having at least four ANC visits across the county.

The findings of this study have several implications: first, beyond providing free antenatal services at public health facilities, the government should try to set up a diagnostic laboratory at health facilities in the mobile community to improve ANC use. Second, availing mobile outreach ANC services at all levels, especially for mobile pastoralist communities with poor healthcare access, and making them ready to provide these services should also be prioritized. In addition to this, the available and close health centers and dispensaries should be equipped to provide ANC services. Lastly, there is a need for doing a more detailed study to understand the variations in the geographical location of the respondents to find the prevailing factors explaining differential in laboratory results informing required intervention and to examine the impact of long-distance travel to ANC during pregnancy on infant health.

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Conflict of interest

The researchers express no conflict of interest.

Ethics Statement

Moyale sub-county hospital Chief Executive Officer gives ethical approval to do a retrospective data review from the hospital's main register.

Authorship

The first author (corresponding author) carried out this research as the principal investigator. The second to fifth authors provided advisory and supervisory roles in the manuscript development process.

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INFLUENCE OF TEAM COHESION IN SPORTS AND RECREATIONAL ACTIVITIES AMONG LEARNERS IN BASIC EDUCATION INSTITUTIONS IN KENYA

Abstract

Objective: Studies globally have shown that physical activity is quite crucial to children's growth and development. There is a gap on the role of sports and recreation in schools as students in some countries, especially in developing countries, struggle to get ample opportunities to have quality sports time and facilities.

Hypothesis: The team cohesion determines the outcome of sports performance among under-15 football teams in Brookhouse School, Nairobi County, Kenya.

There are gender differences in the cohesion of football teams in Brookhouse School.

The win-loss records affect team performance in football teams in Brookhouse School, Nairobi County, Kenya.

Materials and methods: Using a descriptive study, the purpose of this research was to examine the influence of team cohesion in sports and how it relates to performance in football for under-15 teams in school. The study was carried out in 2018-2020 in a private school in Nairobi County, Kenya. The study used descriptive survey to determine the level of cohesion in the teams. The targeted population was both the female and male football players in Brookhouse School, Runda. A stratified random sampling was used in this study to sample the players where gender was equally represented. A target of 25 players from each team was selected for sampling where simple random sampling was used to get the final sample of 50. A self-administered questionnaire and observation schedules were used to collect data from the respondents. Data obtained was analyzed using Statistics v.27 program. Qualitative data was organized, tabulated and analyzed using simple frequencies and percentages presented in form of frequency and percentage tables and figures. Independent sample t-test and one-way ANOVA tests at 0.05 level of significant were used to

investigate the win-loss records.

Results: The results show that more research should be carried out at lower levels of football competitions, such as primary and secondary schools, to establish the role of cohesiveness among schools and how to help children as they develop to be sportsmen in future.

Conclusions: Consequently, it can be noted that the unity of a team contributes to or plays a major role in greater collective efficacy, which in turn enhances the great performance of a team. The findings collected indicate a strong relationship between cohesion and success in natural forming sports.

Keywords: football, performance, schools, sports, team cohesiveness

Introduction

Decision-making during the school years will have a significant impact on health behaviors and will determine adult health status. Positive effects can be protective factors for health, while negative experiences can be a risk (Karácsony and Máté-Póhr, 2020). It would be important to reduce and stop negative health behavior trends and to strengthen and increase positive, protective factors. In addition to the family model, the secondary socialization arena also plays an important role in the development of a healthy lifestyle and role models can play a significant role in the choice of values (Hideg, 2020; Hideg, 2021).

According to (Njororai et al., 2013), Kenya's education system put a lot of emphasis on Physical education (PE). It was one of the subjects in the 8-4-4 system of education and also emphasis is placed on it in the current Competency Based Curriculum (CBC). Physical education and sport are an integral learning area in the holistic development of a learner. In basic education institutions, it provides an avenue for learners to be active and learn necessary skills, knowledge and attitudes that lead to a lifelong active lifestyle (Kenya Ministry of Education, Kenya: Physical Education and Sport Policy for Basic Education, 2021). The Report further states that through P.E, sport activities and programs, the mental, social and physical well-being of individuals is improved while creating a healthy and active society. The history of sports in Kenya stretches way back to the period before the British rule, through colonialism to post-independent Kenya. In essence, Kenyans were actively involved in sports through tradition like wrestling, racing, dancing, hunting, boat racing among other before the colonialists introduced the modern education.

Carron (1982) noted increasing youth physical activity as an identified priority in the school environment to promote positive child development. Sports science research can help lead to evidence-based

approaches that will allow athletes and active individuals to exercise their sports talents in optimal ways. Sports psychologists faced several problems in gathering the information that was used to defend the relationship between team cohesion and performance and the dynamism of individuals' perceptions of their group (Carron, 1982; Eys and Kim, 2017).

Conversely, the concept of team cohesion is among the most interesting social-psychological influences that the study was dealing with. According to coaches and their athletes; team cohesion is team unity, togetherness, oneness and a sense of teamwork. It is commonly known that team cohesion is a requirement for a team to succeed. The feeling of team unity enables teams to win trophies or other awards from their competitors, adding value to the sports ecosystem. O'Hara et al., (2021) in their study on emotional engagement in the Special Sports Program (SSP) to determine the outcome in sports for lower high schools in Western Australia found that students involved in the SSP program were emotionally engaged with their school through the SSP. This emotional engagement was evident in the positive feelings students discussed in relation to their participation in the program and the positive relationships they developed during the program. All SSP students said that the program was their favorite subject at school.

According to sports psychologists, there are two types of cohesion: Task cohesion is the degree to which team members work hard and in unity to attain the team's goals. Social cohesion is the manner in which team members cultivate nature and uphold the social relationship amongst each other (Carron et al., 1985). During a sport, the coach and the players must put more emphasis on task cohesion rather than social cohesion. The reason is that driving more of their attention towards task cohesion will lead to achievement. Goals are motivators that drive individual athletes to reach their goals. Achievement is a significant characteristic of task cohesion, where the more success a team experiences, the higher the cohesion (Carron, 1982). Success is the accomplishment of set goals which increases the chances of winning.

Promoting team cohesion in sports

Team Building – building team spirit and setting common goals is key to team cohesion by reducing differences in team roles and emphasizing common goals.

Focus on performance and goals to promote collective efficacy - when players and coaches formulate goals together; it is more likely for players to develop commitment to achieve the goals. Collective efficacy is positively related to how players understand team cohesion (Odhiambo et al., 2020)

Democratic leadership style coaches

should also set challenging tasks to encourage players to work together, hence preventing the formation of social subgroups, understanding team climate, as well as the strengths and weaknesses of each other. Kesthan et al. (2010) posited that the relationship between coaches' leadership styles and team cohesion contributed to the success of the team. Clear communication or clarity of information from the coaches and captains about the team's objectives, tasks, and the role of each member is important to avoid ambiguity (O'Hara et al., 2021).

Thus, the relationship between team cohesion and team performance shaped the platform for the study and its impact to team success. In this case, team cohesion was the independent variable whereas sports performance was the dependent variable. This study is significant for schools and researchers, as the outcomes may contribute to the highly unrecognized role of team cohesion in school and community sport and recreation. The findings and literature may be of benefit to sports coach managers, players and researchers wishing to develop in different field of sports and recreation. The findings will contribute to the recognition and understanding that team unity is a major contributor to team success and therefore has a place in the value chain of sport.

Ruder et al. (1982) demonstrated in their study on the effect of single-game results upon team cohesion that team cohesion is not a static and stable phenomenon but changes throughout the season. Similarly, successful teams had a high rate of togetherness following a match, while the losing teams were less unified. Transitory effect of a game outcome on team cohesion was much more pronounced for the intramural teams than for intercollegiate teams. The latter evidenced a greater degree of stability for this team attribute. Even though sports psychologists have shown a relationship from cohesion to performance and from performance to cohesion, they stated that directional influence seems to proceed to a greater degree from performance to cohesion. Quality physical education is a platform for inclusion in the wider society, particularly in terms of challenging stigma and overcoming stereotypes (UNHCR, 2011).

Odhiambo et al. (2020) examined the effect of pre-season cohesiveness upon performance measures in 3-main intramural football teams employing sport cohesiveness questionnaire. In addition to the formation of male and female teams, the authors grouped the teams into three ability levels based on a standardized pre-season football skills test. The researchers were able to examine whether the cohesion/performance relationship differed by ability level or by

sex. They realized that the higher-ability teams showed stronger team cohesion and performance than lower-ability teams: believing that these teams might be more sensitive to social team factor. Their results showed that no significant differences were found in the cohesion/ performance relationship as a function of ability and sex. They found that higher levels of task cohesion were associated to higher levels of performance across all ability levels but the relationship was no different for good, average or poor teams. Team cohesion and players' mood are likely to affect the team's performance. Carron's (1982) model of cohesion lists the main and crucial contributing factors which interacted to boost both the social or task cohesion (Figure 1).

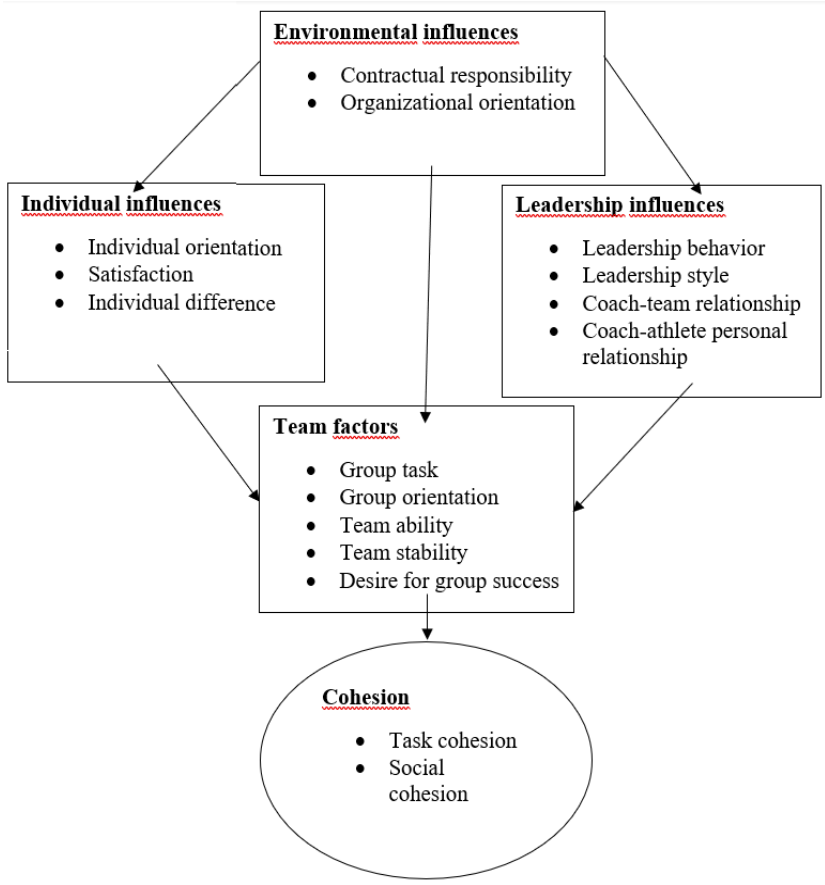

Figure 1. Conceptual framework: A General Conceptual System for Cohesiveness in Sport Teams (adapted from Carron, 1982)

Source: Authors' edition

Objectives

Studies globally have shown that physical activity is quite crucial to children's growth and development. There is a gap on the role of sports and recreation in schools as students in some countries, especially in developing countries, struggle to get ample opportunities to have quality sports time and facilities.

Objectives of our study are to establish how team cohesion determines the outcome of sports performance among under-15 football teams.

To establish whether there are gender differences in the cohesion of football teams in Brookhouse School, Nairobi County, Kenya.

To identify how win-loss records affect team performance in football teams.

Hypotheses

H1: The team cohesion determines the outcome of sports performance among under-15 football teams in Brookhouse School, Nairobi County, Kenya.

H2: There are gender differences in the cohesion of football teams in Brookhouse School.

H3: The win-loss records affect team performance in football teams in Brookhouse School, Nairobi County, Kenya.

Materials and methods

A descriptive research design was used. The target population of this study consisted of both female and male football teams of Brookhouse School. Each team has a total of 25 players, which implies that the study targeted 50 players.

Stratified-random sampling was used to ensure that each team provided 25 players who had been in the team for not less than 1 year; gender was equally represented. Simple randomization was used to obtain the final sample of 50 players. This proportion of the total population was acceptable in descriptive research design and data was collected using self-administered questionnaire (Mugenda and Mugenda, 1999).

The study was carried out in 2018-2020 in a private school in Nairobi County, Kenya. A self-administered questionnaire deemed appropriate was used in data collection. The questionnaire contained three sections: the demographic (e.g.: gender, age group, religious status), social interaction (e.g.: What activities do you share with the members of your team?; Are there some players that you dislike in your team?) and performance sections. Here we listed six statements and the students had to mark the most typical answer for them on a five-point Likert scale (e.g.: I am not happy with the amount of influence I have on the team or Our team members do not clearly communicate to each other during a competition). The questionnaire consisted of both open-ended and close-ended

questions for structured responses which were to ease tabulation and analysis. Data obtained was analyzed using Statistical Analysis Software v.27 program. Qualitative data was organized, tabulated, and analyzed using simple frequencies and percentages presented in form of frequency and percentage tables and figures. Independent sample t-test and one-way ANOVA tests at 0.05 level of significant were used to investigate the win-loss records.

Results

In terms of team composition, most of the players (26, 70.27%) were in teams of 20 to 30 while 11 (29.73%) were in teams of above 30 players. Regarding social cohesion, the degree of social cohesion among the players indicated that the larger the team, the lower the strength of friendship between players, which increased as the number of players per team decreased.

Table 1 indicates that the mean and standard deviation of the number of friends and players in a team for both male (m=23.21±8.09), (m=31.10±7.02) and female (m=20.56±14.29), (m=30.33±7.21) respectively proved there was no significant difference in social cohesion between male and female under-15 football teams in Brook house school. This was effectively shown by the number of friends (p=0.53>0.05) and the number of players (p=0.75>0.05), thus the hypothesis was retained.

Table 1. Summary of t-test on the number of friends versus the number of players.

	Gender					
	Male		**Female**			
	Mean	SD	Mean	SD	t-value	P
No. of friends in the team	23.21	8.09	20.56	14.29	0.63	0.53
No. of players	31.10	7.02	30.33	7.21	0.32	0.75

Source: Authors' edition

In terms of disliking a member of the team, the respondents indicated that 4 (10.81%) of the members disliked someone in the team while 33 (89.19%) showed that they did not dislike anyone in the team. Those who disliked some members gave reasons for their dislike which indicated that those who disliked acted less but talked too much, they were proud of themselves and others indicated that they had personal issues that led to the hatred.

In terms of social benefits, the study findings indicated that the team gave room to develop and mature young talents by giving enough opportunities for players to improve personal performances and skills. On popularity of the members, the players reported that unpopular members in their teams where the majority (19, 51.35%) and there were no popular players in the team while (18, 48.65%) indicated that there were popular members in their team.

Table 2 indicates that majority of the players affirmed to be playing as a team (36, 97.30%) and they blamed the team (34, 91.89%) while those playing based on individual talents (1, 2.70%) and those who blamed particular players (2, 5.41%) this indicated that the team cohesion among the team members was strong.

On team cohesion (task and social) distribution, the respondents indicated that majority of players were happy with the amount of influence they had on their teams (26, 70.27%), united to achieve the teams' set goals (31, 83.78%), willing to help a team member who had a problem (31, 83.78%) and assumed responsibility for poor performance (31, 81.08%).

Respondents also noted that the activities players shared as a team such as swimming, team bonding, playing, celebrations and training assisted them to stick together, thereby creating a strong cohesion between the team members, thus helping them to succeed.

Table 2. Team cohesion

	Team	**%**	**Individual**	**%**
Nature of play	36	97.30	1	2.70
Whom to blame	34	91.89	2	5.41
Celebrate	37	100	0	0

Source: Authors' edition

Table 3 shows the mean and standard deviation of the number of friends and that players in a team in both the male (m=23.21±8.09), (m=31.10±7.02) and female (m=20.56±14.29), (m=30.33±7.21). These findings indicate that there was no significant difference in social cohesion between male and female under-15 football teams in Brookhouse school. This was practically proven, as the number of friends indicated p=0.53 > 0.05 and the number of players indicated p=0.75 >0.05, hence the hypothesis was retained.

Table 3. Summary of t-test on the number of friends versus the number of players.

	Gender					
	Male		**Female**			
	Mean	s.t.d	Mean	s.t.d	t-value	P
No. of friends in the team	23.21	8.09	20.56	14.29	0.63	0.53
No. of players	31.10	7.02	30.33	7.21	0.32	0.75

Source: Authors' edition

Table 4. Summary of One-way ANOVA to test winning and losing

		Sum of squares	**df**	**Mean square**	**F**
Won	Between groups	410.63	1	410.63	3.31
	Within groups	3475.37	28	124.12	
	Total	3886.00	29		
Lost	Between groups	42.88	1	42.88	22.97
	Within groups	56.00	30	1.87	
	Total	98.88	31		

Source: Authors' edition

The ANOVA results in Table 4 indicates significant results for won matches ($F_{1, 28}$ =3.31, p<0.08) and the lost matches ($F_{1, 30}$=22.97, p<0.01). Post-hoc analyses found no differences in success indicating that teams with a higher mean (410.63) of cohesion won more frequently than teams which lost (42.88). This implied that winning or losing depended on team cohesiveness.

The study findings further indicated that, factors like gender, team preparation, team size, win-loss records and team cohesiveness (social and task) greatly influence the cohesion and performance of the team in one way or another.

Discussions and conclusions

Eys and Kim (2017) noted that team spirit and cohesiveness are critical for success in a given sport activity. While previous researches identified personal characteristics (self–esteem, pride, competition within a team and attitudes towards each other) consisting of both advantages and disadvantages related to performance. Widmeyer and Martens (1978) argued that oneness along with good communication played an important role in achieving social cohesion.

Some players disliked others due to acting less, doing too much talking, having pride and personal issues that caused a lack of trust between the team members. Players in sports teams need to have the same desire and urge of scoring for their team. Unfortunately, some players tend to relax and depend on the efforts of others to claim success. UNHCR (2011) Report indicated that interactions hindered social unity; hence, it becomes difficult to achieve goals in sports and recreation. More cohesive teams were found to hold on stronger shared beliefs about their competence, leading to massive team achievement. Carron (1982) on the other hand, suggested that a focus on the common goal is more valuable for team success than social unity thus it is possible for teammates to dislike each other and still win. Though this may not be a long-lasting win as teams wear out and anger overtakes social wellbeing.

Players in the study celebrated success and embraced loss as a team, so there was a strong bonding in the team following a match. Ruder et al. (1982) indicated that teams which celebrated success and embraced a loss collectively remained more united than those who recognized winning alone. Indeed, the cohesiveness of the team influenced team performance and player's mood.

Larger teams suffer from less cohesiveness (Eys and Kim, 2017). This made sense because this study found that some of the young players found it hard and intimidating to socialize with each other. The extent of cohesion-performance effect was strong for the smaller teams.

Wikman et al. (2017) noted that team

building intervention can be used as an effective intervention to increase social cohesion in young elite football players, who spend a great deal of time together as emphasized in this study. On team size and cohesion, the study findings indicated that the two strengthens friendship among players as team size decreases.

O'Hara, et al. (2021) noted that emotional engagement was evident in the positive feelings the students discussed in relation to their participation in the SSP program and in the positive relationships that they reported having formed during the program. The findings of this study indicated how cohesion helped the teams to be successful. However, in the present study, it was reported that dislike among players negatively affected team cohesion and good performance. Teams where positive task cohesion existed celebrated match wins and losses together.

In retrospect, collective efficacy is a mediator when it comes to relating the differences between the team performance outcome and cohesion. Consequently, it can be noted that the unity of a team contributes to or plays a major role in greater collective efficacy, which in turn enhances the great performance of a team. The findings collected indicate a strong relationship between cohesion and success in natural forming sports. Also, the coaches analyzed the organizations with the aim of manipulating the influences of cooperation as well as competition on team cohesion. The coaching stuff included the operations of teams, since team hierarchy was crucial to them, and it helped the team members during their lowest level of command.

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THE IMPACT OF SPORTS AND RECREATIONAL PROGRAM ON RECIDIVISM OF WOMEN OFFENDERS IN KENYAN PRISONS

Abstract

Objectives: Empirical studies in Kenya indicates that offender participation in correctional rehabilitation programs is associated with reduction of recidivism among male and female convicts. The study sought to analyze the impact of sports and recreational program on recidivism of women offenders in Kenyan Prisons. The main objective of the study was to establish the influence of sports and recreational program on recidivism of women offenders.

Hypotheses: The study hypothesized that women repeat offenders' participation in sports and recreational activities did not have positive influence on recidivism. It was also hypothesized that participation in correctional sports and recreational programs did not prevent women convicts from crime relapse.

Material and methods: The study employed a descriptive survey research design. Both quantitative and qualitative data were collected from the respondents using questionnaires and focus group discussions. Qualitative data was also collected using key informant interviews from correctional officers who were purposively selected. The study targeted a total of 54 repeat women offenders who participated in sports and recreational programs. The repeat offenders formed 33% of the study population hence they formed the unit of analysis. In order to uphold confidentiality of the respondents, the study used snowball sampling strategy to identify the respondents. Quantitative data were analyzed and presented in form of percentages and tables. Qualitative data were analyzed and presented in form of themes and in verbatim form.

Results: The study established that sports and recreational activities had a positive impact on recidivism reduction. Respondents agreed that participation in correctional sporting programs helped them with requisite skills to desist from criminal relapse tendencies. They expressed the perception that participation in sports program provided them with the ability to reflect and change their criminal behavior while in prison and after release. The respondents also indicated that recreation and sport can play a significant role in crime reduction, promotion of socio-emotional skills and improvement of inmates' mental and physical health. Further, the study established that sports and recreational program had a significant effect on recidivism reduction at a rating of 33%, 27% and 25% for significantly high, very high and high, respectively. However only 15% of the respondents rated the influence of sports on recidivism as low.

Conclusion: The conclusion of the study, that penal institutions should strengthen sports training and recreational programs in all women correctional facilities. This is because programs play significant role in helping women convicts acquire requisite skills which is vital for their ability to refrain from committing crimes.

Keywords: correctional rehabilitation, inmates, sports, recidivism, women.

Introduction

Correctional institutions were founded in Kenya during the colonial British rule in 1905. The facilities were mainly designed for detaining African men where they were tortured to death for opposing the colonial repressive laws. The prisons correctional service is entrenched in the Kenyan Constitution (2010) through an Act of Parliament under the Prisons Act (CAP 90). Currently, there are over 107 correctional facilities in Kenya categorized as maximum, medium and farm prisons. Out of this, woman correctional facilities constitute a total of 18 (17%). The current capacity of Kenyan correctional facilities is an average of 54,000 inmates despite the fact that at times it rises to over 80,000 inmates (Kenya Prisons Service, 2016). An analysis of recidivism rates shows that the rate at which women convicts relapses into crime is on the increase compared to the rate at which men convicts relapse into crime (Laisa, 2013).

Socially, recidivism tendencies disintegrate the family unit resulting in high divorce rates among women. For example, in Kenya correctional facilities currently operates at double capacity with an average offender population of over 54,000 nationwide. This translates to an overpopulation of 55% above the official correctional institutional capacity (Kenya Prisons Service, 2016).

Out of this percentage, women constitute a significant number of offenders who despite their participation in correctional programs still find their way back into criminal activities and imprisonment (Achieng et al., 2016; Omboto, 2013). The problem of offender recidivism has challenged the practicality, effectiveness and feasibility of correctional rehabilitation program's primary goal of rehabilitating offenders in Kenya (Kahara, 2017). Research shows that women as opposed to men are increasingly being incarcerated, with an average recidivism rate of 56% in the United States, 60% and 67% in Asia and tropical Africa, respectively. Studies' findings show that men had a lower recidivism rate compared to women whenever both were exposed to the same treatment programs (Walmsley, 2017; California Department of Corrections and Rehabilitation, 2014).

Due to increased correctional population in Kenya in the last decade, prison facilities have been burdened with overcrowding, high recidivism rate, inadequate gender responsive services, poor hygienic conditions and indiscipline among inmates. In view of the foregoing challenges, there is urgent need for not only to decongest the facilities but also to control recidivism rates among offenders (Omboto, 2013). The vicious circle of recidivism, if not controlled, remains the greatest challenge to the proper management of convicted persons.

Sports and offender rehabilitation programs

Developing a healthy lifestyle through sport, physical activity and recreation should start from an early age. Fundamentals of long-term health can be established in childhood, so it is very important to reduce and stop negative health behavior trends while strengthening and increasing positive ones (Karácsony and Benkő, 2020).

Decision making during the school years has a significant impact on health behavior and influences future health in adulthood. Positive impacts can be protective for health, while negative impacts can pose a risk (Karácsony and Máté-Póhr, 2020). Hideg (2021a, 2021b) also draws attention to the importance of the family. The author notes that role models play an important part in young people's lives and that they are chosen mainly from the family.

Giménez et al. (2003) noted that, when properly oriented, sport can aid in a person's overall formation because, as inmates taking part in sports programs themselves acknowledge, they not only learn technical-sporting aspects, but also personal and social values that facilitate their future integration into society (Devís-Devís et al., 2017; Ortega, et al., 2019).

Sports programs offered in prisons aim to

"promote, through the practice of sport, attitudes, skills and behaviours that help to prevent high-risk social behaviour and favour insertion, trying to meet the existing demand and help to achieve physical, mental and social well-being (Secretaría General de Instituciones Penitenciarias Informe General, 2017).

However, the existence of various correctional interventions in Kenya, an analysis of recidivism rates shows that the rate at which women convicts relapses into crime is on the increase compared to the rate at which men convicts relapse into crime (Miriti and Kimani, 2017).

Ortega et al.'s (2019) research aimed at analyzing the implementation of a sports-educational program in prisons in Spain where the Real Madrid Foundation's Social-Sports Program is carried out. It is significant that inmates considered that their participation in the social sports program has had a favorable influence on their life in prison and has helped them, in particular, to have fun and be happier.

In his research findings in Victoria Australia posited that sport and physical activities have been present within the prison landscape for more than a century. Sport and physical activities have been an intrinsic part of the prison culture. Initially, sport and physical activity was seen as simply a way to keep prisoners busy, but this is no longer the case. A new body of knowledge has demonstrated benefits like improved physical and mental health outcomes, supporting prisoners with adjusting and coping with life in prison, reducing violence and conflict, and perhaps most importantly, supporting the reintegration of prisoners back into the community (Gallant and Turner, 2019).

In some cases, participation in sports by prisoners can contribute to higher energy levels and better moods which positively impacts the prison atmosphere, staff and inmate interaction, and prisoner engagement with work**.**

Recreation includes activities whose purpose is to bring joy, fun or excitement. These activities are often pleasurable and are not taken part in out of necessity or for material rewards Recreation can also be classified as either passive or active. Active recreation occurs when an individual actively participates in an activity that requires mental or physical effort to a substantial degree. Active recreation includes activities such as playing sports, playing an instrument, gardening, and crafts. Passive recreation occurs when someone is the receiver or consumer of entertainment by other people or activities. Passive recreation activities include watching television, listening to music, reading, and playing computer or console games (Roberts, 2001).

Presently, all correctional institutions provide some degree of access to recre-

ational activities. Sometimes, these programs are referred to as Leisure Time Services (LTS). Programs are available for inmates of different ages, sexes, security levels, and mental capacities (Polson, 2002). Recreational activities in this study include watching TV, playing sports, participation in athletics, drama, skits, storytelling and beauty and modelling competitions. The activities are believed to reduce tensions in correctional facilities and a deterrent to relapse into criminal activities. Such activities are useful towards improvement of inmates' psychosocial wellbeing (Woods et al., 2017).

Research show that provision of correctional recreation and sports programs to inmates have a positive influence on inmates' mental wellbeing, physical health and recidivism tendencies. Physical wellbeing outcomes include providing alternatives to substance abuse in prison, reducing health risks for older inmates and inmates with a chronic disease and increasing the general physical fitness levels of inmates. Inmates who are regularly engaged in sport and recreation activities report improved levels of self-esteem, decreased depression and feelings of hopelessness (Meek and Lewis, 2014; Buckaloo et al., 2009).

However, few studies have examined the influence of recreation and sports on recidivism of female offenders in Kenya. According to Meek and Lewis (2014), correctional recreational program is useful as a means of physically managing inmates as well as a strategy for inmate rehabilitation.

The main aim of recreational programs is to ensure that correctional officers are used as mentors and positive role models for inmates who are expected to desist from recidivist behavioral tendencies (Grossman, et al., 2014). However, Jones, et al. (2014) posit that sports-based crime reduction programs have an insignificant role in recidivism reduction and towards supporting resettlement of released inmates.

Correctional staff members understand physical recreation programs in terms of the means through which inmates are pacified from criminal tendencies hence reducing idleness within the prison environment. Similarly, Pawelko and Anderson (2005) posit that correctional recreation plays a significant role in reducing inmates' idleness, restlessness and thus contributes to law and order in correctional facility.

Objectives

To establish the extent to which sports and recreational program influence recidivism of women offenders in Kenya.

To explore the long-term effect of sports training on women repeat offenders in Kenya.

Materials and methods

The study was conducted in Homa Bay County, Kenya. This is among the 47 counties in Kenya and is one of the Lake Region Blocks category in Kenya. A mixed method approach comprising a descriptive survey research design was employed (Creswell, 2014). The respondents who constituted the study population had the following common characteristics: (a) had relapsed into criminal activities; (b) participated in custodial rehabilitation programs, one of them being sports. The unit of analysis in this study were women offenders who had a history of relapse into crime and also participated in correctional programs.

The study target population was comprised of 162 convicted women offenders. In order to uphold confidentiality of the respondents, the study used snowball sampling strategy to select 54 repeat women offenders who were eligible and voluntarily accepted to participate in the interview. Both quantitative and qualitative data were collected from the respondents using questionnaires and focus group discussion interviews. Qualitative data was also collected using key informant interviews from correctional officers who were purposively selected. The respondents formed 33% of the total study population hence formed the unit of analysis for the study. Quantitative data were analyzed and presented in form of percentages and tables. Qualitative data were analyzed and presented in form of themes and in verbatim form.

Results

The findings show that majority of recidivist women offenders who participated in correctional sports and recreational programs were those convicted of drunkenness (20.8%) and those who handled stolen property (18.6%). This was followed by those who sold illicit brews like changaa (14.6%), participated in sale of cannabis sativa (8.2%), engaged in sale of drugs and shoplifting both at equal rates (6.3%). The rest of the respondents who reoffended were convicted of fraud, forgery and assault (4.2%). The findings show that most of the respondents were involved in petty crimes due to economic hardships and breakdown in family relationships (Table 1).

Table 1. Population Classification of Offence in Homa Bay Women Prison

Category of Crime/Offenses	Number of Recidivist Women Offenders	%
Theft/burglary	3	6.3
Brewing, possession and sale of illicit brews *(Changaa)*	7	14.6
Sale of poisonous drugs	3	6.3
Handling stolen property	9	18.6
Drunkenness and disorderly conduct	10	20.8
Assault (inflicting physical harm to spouse)	2	4.2
Child neglect	3	6.3
Fraud and forgery	2	4.2
Shoplifting	3	6.3
Manslaughter	2	4.2
Possession/sale of cannabis sativa	4	8.2
TOTAL	48	100

Source: Homa Bay Women Prison Lock-Up Data, 2021
Authors' own editing

The study employed the census sampling technique to cumulatively cover and interview all the 54 repeat women offenders who were considered as eligible respondents.

In relation to the respondents' level of participation in sports as a recreational activity in Homa Bay Women prison, the respondents rated netball (25%), basketball (12.5 %) and volleyball (16.7%) to be the most preferred type of sporting activities. This was followed by weight training (14.6%), basketball (12.5 %) and tennis (10.4%) (Table 2).

Table 2. Types of sports provided

Type of Sports	Frequency	Percentage
Basketball	6	12.5
Softball	8	16.7
Netball	12	25
Volleyball	8	16.7
Weight Training	7	14.6
Tennis	5	10.4
Pool	2	4.1
Total	48	100

Source: Authors' edition

The study results show that most of the respondents rated storytelling (25%), drama, skits (20.8%) and volleyball (16.7%) to be the most preferred recreational activities. This was followed by participation in athletics (16.7%), playing of musical instruments (16.7%), reading at the library, watching TV and movies both at equal rates (10.4%). Durose et al.'s (2014) study illustrates that most inmates look forward to participating in recreational activities. This is because it provides an escape from their monotonous lives as prisoners (Table 3).

Table 3. Recreational Programs

Sports and Recreational Programme	Frequency	Percentage %
Library reading,	5	10.4
Watching TV, movies	5	10.4
Participation In Athletics	8	16.7
Drama, Skits	10	20.8
Storytelling	12	25
Playing of musical instruments	8	16.7
Total	48	100

Source: Authors' edition

The study established that sports and recreational programs had a positive influence on recidivism reduction since majority of respondents said they would be committed to participating in sports activities after release from custody. In addition, inmates felt that they had learnt a great deal about the contents relating to sporting skills. However, majority of respondents felt that participation in sports and recreational activities did not help them acquire employment and livelihood skills at a rating of 61% low and 21% moderate. The influence of other activities on recidivism such as participation in fashion design and beauty therapy were also rated as low, thus they had insignificant influence at a rating of 54.2% for low. The findings therefore show that there is a need for correctional authorities and penal institutions to promote sports, games and other feminist vocational trades such as fashion design.

The study established that most of the respondents were of the opinion that sports and recreational program had a significant effect on recidivism reduction. Thirty-three point three percent rated of this programs to be significantly high, 27% very high, 25% moderate, while 14.7% rated this as low (Table 4).

Table 4. Respondents' rating on the influence of sports and recreational program on recidivism

Influence of Sports	**Frequency**	**Percent%**
Very high	13	27
High	16	33.3
Moderate	12	25
Low	4	8.5
Very low	3	6.2
Total	48	100

Source: Authors' edition

Recreational activities such as watching TV, playing sports, participation in athletics, drama, skits, storytelling and beauty and modelling competitions are believed to reduce tensions in correctional facilities and acted as a deterrent to relapse into criminal activities. A respondent from focus group three concurred with the same view while responding to the question regarding the influence of sports and recreational program on crime deterrence. The second participant had this to say regarding the influence of sports and recreational program on crime deterrence:

"Sports and recreational program such as playing sports and watching TV makes us strong and helps us to change our attitude towards criminal habits. … [pause] … The programs not only give us opportunity to mend our ways through involvement but also provide us with an opportunity to competitively identify our inert talents."

Discussion and conclusions

The study established that most of the respondents were of the opinion that sports and recreational program had a significant effect on recidivism reduction. Thirty-three point three percent rated of this programs to be significantly high, 27% very high, 25% moderate, while 14.7% rated this as low. According to Meek and Lewis (2014), correctional recreational program is useful as a means of physically managing inmates as well as a strategy of rehabilitation of inmates.

In corroborating the study findings, Woods et al. (2017) illustrate that the provision of sport and recreation programs to inmates within the prison system provides them with a unique opportunity to reform. The author illustrates that prison-based sport programs aim to transform the mental health, social and economic wellbeing of convicts.

In relation to sports in the Homa Bay Women prisons, the respondents rated netball (25%), basketball (12.5 %) and volleyball (16.7%) to be the most preferred type of sports. This was followed by weight training (14.6%), basketball (12.5 %) and tennis (10.4%).

On the whole, the study established that most of the respondents (64.6%) agreed that correctional sports and recreational programs had a significant influence on recidivism. The study findings showed that the respondents had a perception that the programs aided in reducing recidivism. In terms of supervision of sports and recreational program activities, 47.9% and 43.8% rated the level of supervision as high and very high, respectively. The results implied that sports and recreational program had a positive influence on recidivism reduction in women correctional facilities in Kenya.

Recommendation

The study recommended the use and

implementation of correctional reforms as set out in the Nelson Mandela Rules, The United Nations Standard Minimum Rules for the Treatment of Prisoners (SMR) which were first approved in 1957 and revised in 2015 revisited and used in treatment of prisoners and other offenders alongside other rules in the country. There is a need to redesign and align sports and recreational programs so that the activities can be able to address the criminogenic female gender needs. Policy reforms that target non-custodial forms of rehabilitation should be introduced to help women convicts keep their social ties with their respective families.

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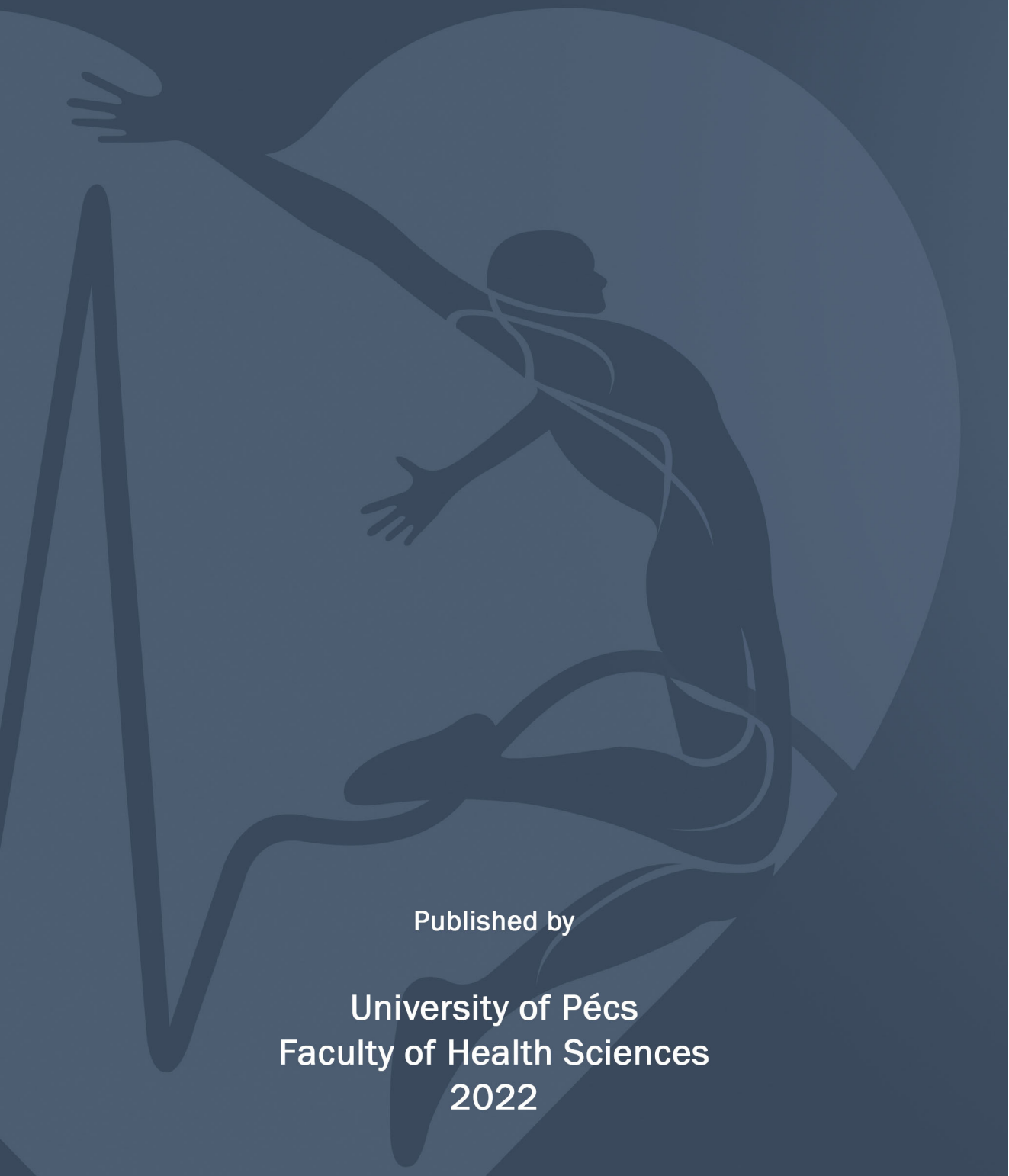

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