

## 2<sup>ND</sup> MULTI/INTERDISCIPLINARY RESEARCH Conference 2017

*“Ending Hunger, Improving Health, Inequality  
and Environmental Change in Africa for  
Sustainable Development”*



**BOOK OF ABSTRACTS**  
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# **INTRODUCTION**

The 2<sup>nd</sup> Multi/Interdisciplinary Research Conference is hosted by the University of Namibia (UNAM) through the Multidisciplinary Research Centre (MRC). The main objectives are to provide opportunities for academics from a range of disciplines, and countries to share their research, to receive in-depth feedback through discussions and to enable them to establish contact with researchers from other institutions and countries. The platform is used to establish collaborative research links within the country and beyond, as well as to provide an effective knowledge sharing platform for intellectual engagement and discussions on issues relating to Sustainable Development agenda.

It is anticipated that the conference yields insightful recommendations on the way forward in achieving the Sustainable Development Goals (SDGs) of ending hunger, eradicate poverty, improving health, inequality and environmental change in Africa.

# **THEMATIC AREA: POVERTY AND FOOD SECURITY**

## **THE EFFECTS OF PESTS ON PEARL MILLET YIELD AND HOUSEHOLD FOOD SECURITY IN NORTH CENTRAL NAMIBIA**

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Pearl millet is the major staple food for over 50% of the Namibian population. Pearl millet yield is affected by pests, diseases, low soil fertility, low rainfall and floods. The purpose of this study was to assess the effects of pests on pearl millet yield and household food security. A multistage sampling method was used to purposively select three villages near Olushandja dam in Omusati Region. A sample of 60 households was interviewed using a structured questionnaire. Results were analyzed using descriptive statistics in SPSS and were presented in tables and charts. The results indicated that all the farmers that were interviewed experienced loss of pearl millet yield in the field each year due to pest attack and in 2016, 28% of the yield loss was attributed to quelea quelea birds. In addition, results also revealed that 56.7% of the farmers do not have sufficient food to last until the next harvest. The study concluded that *Quelea quelea* birds were the most cause of pearl millet yield loss when there is no drought. The study recommends adoption of measures that may reduce bird attack such as use of bristle (hairy) varieties, synchronization of planting and harvesting on time as well as improved bird scaring methods.

## **ATTAINING FOOD SELF-SUFFICIENCY THROUGH TARGETED COMMAND AGRICULTURE SCHEME (TCAS) IN ZIMBABWE: PIPE DREAM OR REALITY?**

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To avert hunger and improve food security, the Government of Zimbabwe in 2016 unveiled an agricultural programme called Targeted Command Agriculture Scheme (TCAS) for the 2016–2017 agricultural seasons. This paper interrogates the wisdom behind the adoption of TCAS and forecasts its chances of succeeding taking into account the monumental failure of previous programmes, Operation Taguta/Sisuthi (2005 – 2006 farming season) and Farm Mechanisation Scheme (2007). The paper also probes the effectiveness of the measures that have been taken to curtail abuse of the agricultural inputs by the political elite. The government mobilised US\$500 million for procuring inputs for at least 2 000 farmers near water bodies. TCAS is a centrally planned, self-financing scheme requiring each beneficiary farmer to commit 5 tonnes per hectare towards repayment of the advanced loans while retaining surplus. The paper is informed by the interpretivist research philosophy, the design is exploratory and data collection tools comprise of document analysis and interviews. The study targets a sample of 50 farmers in the Mashonaland East and West (Zimbabwe's region one), 10 representatives of the two farmers' organisations, 5 members of the team from the president's office coordinating the programme and three agricultural scholars at University of Zimbabwe. Emerging from the study is that the programme is ideal for farmers without collateral to borrow from banks creates employment in the agricultural and other sectors through forward and backward linkages and success of TCAS liberates the fiscus from importation of maize. On the other hand inputs reached some farmers late while others farmers failed to get the inputs, totally. An audit is yet to be carried out to determine who got what versus how much they have produced. There is room to improve TCAS, make it sustainable and productive through capacitating farmers, curtailing corrupt tendencies and screening farmers.

## **MUSHROOM FARMING**

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Mushrooms appear naturally in forests around the world and many communities harvest them for consumption or medicinal uses. Many like *Termitomyces* (omajova), kakalahambo, oshihamuya, Omatumbula, morels, shiitake and chanterelles are some of the mushrooms consumed in most countries. Many cases of poisoning and even death have also been reported in some parts of the world due misidentification and consumption of lethal mushrooms. Mushroom farming is the process of cultivating mushrooms, so that they are available all year round. The cultivation of edible mushrooms dates back many centuries and many mushroom species are cultivated indoors in climate-controlled buildings referred to as mushroom houses. Cultivation of edible mushrooms provides access to edible mushrooms such reducing the risk of accidentally consuming the poisonous types. Mushroom cultivation also ensures reliable and constant supply of mushrooms to communities that usually depend on their availability during the rainy season. The easiest and most common cultivated mushrooms in many countries include *Pleurotus* species, also known as Oyster mushrooms. Most cultivated species include *Pleurotus ostreatus*, *Pleurotus sajo-caju*, *Pleurotus* HK35 (hybrid). These types of mushrooms require less technical skills and resources, making them ideal for low skilled and resource poor communal farmers to grow them as a cash crop. In addition, most countries produce bulky agricultural waste including wheat straw, maize cobs and millet husks which are excellent substrates for oyster mushrooms. Growing mushrooms has a number of techniques including developing of a mother culture from a fresh mushroom and spawn making as outlined in this poster.

## **CLIMATE VARIABILITY: AN ASSESSMENT OF CHALLENGES AND OPPORTUNITIES OF FLOODS IN NORTH CENTRAL NAMIBIA**

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North Central Namibia experience floods periodically even in years of low rainfall and usually occur after a drought year. The Cuvelai Drainage system is prone to these floods. The source of the floods in North Central Namibia is normal rainfall in the area and “efundja” from Angola. The objective of this study was to assess challenges and opportunities of floods in North Central Namibia in order to inform policy makers on ways to minimize the costs of floods as well as taking advantage of the benefits that can accrue from floods. This study was based on review of literature, observations in the area, and interviews with key informants that included community members and government officials as well as a small scale interview with community members. The main challenges were that floods damage crop fields, household property, businesses and reduced accessibility to health facilities, schools and work. Livestock grazing areas were also found to be submerged under water thereby limiting access to grazing especially of many livestock that were just recovering from recent droughts. Thus floods contribute to death of people and livestock and crop failure. The floods were also found to bring with them fish, and also fill water sources such as *oshanas* that are usually dry for prolonged periods. Thus the opportunity that floods bring is water harvesting and preservation for dry periods through excavation of dams and reservoirs in areas where water is scarce for most parts of the year. Built up areas like towns will need to create drainage systems that channel the water to reservoirs. Thus the study concluded that there is a lack of long term solution and preparedness on dealing with flood water both in communal and urban areas. The study recommends long term water harvesting mechanisms such as earth dams as well as proper drainage systems in urban areas among others.



## **REALISATION TO CREATE OUR OWN REALITY**

Menete Ndeyapo Hashipala

Science through Quantum Physics evidence presents the Universal Laws, a principal that governs our life (Sogyal Rinpoche.145). If people are aware and learn how to align with these laws, it can help create their reality. How do we relate poverty to the law of the universe? How do we frame our state of mind concerning poverty? Those who have been raised in a poor environment know nothing but said environment, the opposite is true. If you were raised in a household filled with negative reminders about limited resources, money doesn't grow on the tree or money is the root of evil you will have carried your learned beliefs into adulthood. These learned responses are embedded in your brain and always repeat themselves to remind you of your limitations. People can successfully reprogram their old beliefs and habit and come out from poverty. Norman Vincent (The Power of Positive Thinking) said, "Change your thoughts, and you change your world." Namibia made progress on poverty alleviation programmes expressed in Harambee Prosperity Policy (HPP), Vision 2030 and others reports that evidenced the goal achieved to eradicate poverty. HPP argues that the way to address poverty is through wealth creation. This paper challenges perception, attitude and the use of the term Poverty Alleviation Programmes to consider replacing it with the term Wealthy Manifestation or Wealthy Creation Programmes because its goal is to create wealth. The purpose of this paper is to present a systematically framework to raise awareness and understanding of the Universal Laws and how it applies to poverty. The study comes from the school of thought of action research; it will conduct the systemic review and uses the qualitative method to analyse secondary research, source data and make reference to author's personal experience.

## **ADDRESSING POVERTY AND INEQUALITY IN NAMIBIA THROUGH THE NATIONAL EQUITABLE ECONOMIC EMPOWERMENT FRAMEWORK: LESSONS FROM SOUTH AFRICA**

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In 2015, the Government of Namibia formulated the National Equitable Economic Empowerment Framework (NEEEF) with a view to pursue equitable socio-economic transformation and empowerment of all citizens. This is against the background that Namibia is among the most unequal countries in the world, and more than one in four households live in poverty (Namibia Statistics Agency, 2016; UNDP, 2016). The NEEEF Bill is now awaiting enactment, albeit confronted with notable resistance from some sections of the business community, civil society and international institutions. In Southern Africa, more or less similar policy frameworks are being implemented in Zimbabwe and South Africa. South Africa's Broad-Based Black Economic Empowerment (B-BBEE) Policy, adopted after the enactment of the B-BBEE Act 53 of 2003, share more salient features with Namibia's envisaged NEEEF. To date, South Africa's B-BBEE has its fair of successes and challenges. Using a documentary research approach, this paper analysed the prospective socio-economic implications of the envisaged NEEEF on addressing poverty and inequality challenges in Namibia, and highlighted possible lessons that can be borrowed from the South African experience as the enactment of the NEEEF Bill is being considered. It argues that NEEEF may significantly contribute towards addressing rising inequality and poverty, especially among the black population although it risks widening inequality and worsening poverty if not properly implemented. Based on experiences from South Africa's B-BBEE Policy implementation, the paper identifies five key measures that should be adopted by the Government of Namibia in order for the NEEEF to fully realize its set targets and policy objectives, viz, (a) appointment of an independent, well-capacitated and apolitical Economic Empowerment Advisory Council and Economic Empowerment Commission; (b) development of a transparent mechanism to regulate equity and procurement transactions under NEEEF; (c) institution of a mechanism that prioritizes the poor, disabled and marginalized

citizens as beneficiaries; (d) putting in place flexible NEEEF compliance targets in a way that does not discourage prospective investors and Foreign Direct Investment (FDI) receipts; and (e) structuring the NEEEF in a manner that respects private property rights and complies with Namibia's Bilateral Investment Treaties (BITs), Reciprocal Promotion and Protection of Investment Agreements (RIPPAs), and other international investment laws.

# THEMATIC AREA: ENERGY AND WATER

## ENVIRONMENT AND SUSTAINABLE DEVELOPMENT: A DEVELOPING WORLD PERSPECTIVE

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This article highlights the importance of the environment and sustainable development in today's developing world perspective and examines how the environment and sustainable development demands the world to get into that complexity with a better understanding. Environment and sustainable development calls for people of the world to embrace complexity, because we are dealing with a complex, interconnected set of relations of a world economy that now spans all parts of the world. This connects all people, all businesses, finance, production systems, technologies in flows of trade, ideas, advertising, but also connects us with the physical Earth, in unparalleled ways. This paper concludes that civilization is indeed changing the climate, changing what species survive on the planet, changing the chemistry of the ocean, changing the safety of the air, changing the safety of animals, loss of biodiversity, changing the availability and access of fresh water. The paper provides answers to fundamental questions about this unprecedented situation, how can we take environment and sustainable development as a goal and emphasises some very powerful ways forward to meet environment and moreover, sustainable development as a goal, a shared goal for Namibia, for Africa and for the planet.

## STRENGTHENING GLOBAL PARTNERSHIP

Hambeleleni Abisai

Fair international collaboration offers limitless benefits to respective partners, especially in current time when business environment changes rapidly and education moves away from conventional pedagogy towards business-oriented model, to bridge employability skills gap. Global partnerships require competitive approaches for sustainability. This paper explore what role Namibia higher education institutions play and how they facilitate successful global partnership to take advantages of alleged benefits. It reflects on how Namibia Higher Education shares responsibilities and equally participates in decision-making, and how such consequently contributes to the country's development? Namibia takes pride in international solidarity (OfficeOfThePresident, 2016), prior and after the liberation strives for Namibia independence. The country secured reputation as trusted and respected member of international community (USAID, 2010), evidenced in policy and practice. The Harambee Prosperity policy arguably ushers Namibians into an era of prosperity for all citizens, based on respective inherent abilities. The National Development Plan and The Vision 2030 complements in address social, political and economic development challenges. The policy should not only facilitate development based on inherent abilities reflected in Harambee policy, but should afford opportunities to fulfil potentials and appreciate genius for all citizen living in pronounced poverty. The study explores the impact of global partnership in Namibia higher education institutions, in view of community of practice theory, which encourages mutual engagement, joint enterprise and a culture of shared repertoire argued by (Lave, 2011; 1988), (Lave J; Wenger E, 1991) and the theory of change. It analyses and evaluates the global partnership's alleged benefits to validate its authenticity in view of Namibia. It undertakes systematic review to analyse qualitative data from secondary research and sources. It further utilises semi-structured interview to collect data, and evaluate experience of those engaged in global partnerships activities;

highlighting priorities needs, economic and social values and why Namibia education institutions collaborates with selected organisations. The outcome contributes to meeting the global partnership for sustainable development goal, adds value to the body of knowledge, and offers recommendations to contribute to policy development and practice improvement.

## **IMPLEMENTATION REVIEW OF A RENEWABLE ENERGY-POWERED TECHNOLOGY: A CASE STUDY OF THE BENGUELA WIND POWER DEMONSTRATION PROJECT**

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The University of Namibia (UNAM) under its Multidisciplinary Research Centre (MRC) in collaboration with the Benguela community of Luderitz is implementing a Wind Power Demonstration Project in Luderitz, southern Namibia. This paper highlights the project progress to date, accomplishments, challenges experienced and future project plans. The main thrust of the research focused on the lesson learnt in relation to the project plan which includes; project objectives, project finance, project management, project equipment, project challenges, solutions implemented and experiences obtained. The research data is collected from database of the ongoing project in Luderitz. The paper further presents the results of how the current project operational structure deviated from the original project plan, the practical management solutions that the project offered as well as recommendations to mitigate the occurrences of similar project challenges in the future. The significance of this paper is to contribute to the improvement of the community-run renewable energy project management systems.

## **THEMATIC AREA: ECONOMICS AND LABOUR**

### **POTENTIAL IMPACTS OF LEASEHOLD AGREEMENT ON THE LIVELIHOOD AND AGRICULTURAL PRODUCTIVITY OF NATIONAL RESETTLEMENT PROGRAM (NRP) BENEFICIARIES**

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The link between formalization of property rights in land and Agricultural productivity and enhanced investment incentive is one of the subjects extensively examined in Africa, yet yielding mixed conclusion. Notwithstanding, the mixed conclusions and coupled with higher rate of unemployment and poverty in the continent the debate on formalization of property right has gained momentum and many governments – including Namibia, the case study of this article, especially in the form of assigning leasehold agreement to land reform beneficiaries. The aim of this article was to assess the impact of Leasehold agreement on the livelihood of beneficiaries in terms of access to agricultural credit, asset accumulation and agricultural productivity, using data from surveys that were conducted with 108 resettlement beneficiaries. A questionnaire survey combined with key informant interviews was used to assess the impacts of leasehold agreement on various variables that constitute the livelihood of the resettlement beneficiaries. The results indicate that the programme has enhanced the livelihoods and agricultural productivity of the resettlement beneficiaries as many farmers indicated their agricultural outputs have increased since resettlement. In addition, there was significant investment in farm infrastructure, livestock, transportation and even maintenance and repairs. However, the study found marginal differences between LA and NLA beneficiaries and these have been attributed by the fact that current lease agreements had little impacts because the majority of them were not registered with Deeds office. Even though in its current form leasehold agreement could not be used as collateral by Commercial Banks, the agricultural bank of Namibia do accept it and commercial banks indicated the willing to negotiate and find solution to assist the farmers.

### **PROTECTING AND PROMOTING LABOUR RIGHTS AS HUMAN RIGHTS: EXAMINING THE PLIGHT OF FARM WORKERS IN NAMIBIA**

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There is an ongoing debate as to whether labour rights should be classified as human rights or not. Some scholars argue that labour rights are distinct from human rights in general. However, they concede that there is a thin line between the two as they tend to influence one another in many aspects. It can also be deduced that international human rights legal instruments such as the International Covenant on Social, Economic, and Cultural Rights (ICECSR) and the International Convention on the Elimination of All Forms of Discrimination (ICERD) among others directly impacts labour rights. Forced labour or slavery and poor working conditions are strictly prohibited under the above international human rights instruments. Chapter 3 of the Namibian Constitution can be argued to implicitly recognise labour rights as human rights. Articles 21(1) (e) and (f) and (j) and 23 specifically links labour rights with human rights. Labour related research indicates that hundreds of Namibians and non-Namibians alike are employed as farm workers on either communal or commercial farms. Foreign farmworkers form the bulk of employees in northern and north eastern regions of the country and like their Namibian counterparts, they too suffer abuse and exploitation at the hands of their employers. The objective of this study is aimed at interrogating the legal and policy frameworks that are in place to protect farm-workers in Namibia. It is through this interrogation that the authors of this paper aim to find a nexus between labour rights and human rights. The study utilised desk research methodology and individual face to face interviews to yield the results of the research. The results of these research can be summed up as follows:

the country's human rights and labour legislation though very progressive and in line with those principles espoused by the International Labour Organisation (ILO) and other international human rights instruments have largely failed to protect the human rights of farm-workers in the country. The authors recommend that Government through the Ministry of Labour, Industrial Relations and Employment Creation should robustly review its policies and legislation in relation to farmworkers. Moreover, the Ministry of Labour, Industrial Relations and Employment Creation should employ more labour inspectors, who should be specifically tasked to investigate cases of abuse of farmworkers.

## **ASSESSING ORGANISATIONAL JUSTICE AS A PREDICTOR OF JOB SATISFACTION AND EMPLOYEE ENGAGEMENT OF EMPLOYEES IN WINDHOEK**

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**Orientation:** Working in the service industry with similar products and services requires organisations to be proactive and efficient. Enhancing employees' levels of organisational justice will likely influence job satisfaction and employee engagement. **Research purpose:** The purpose of this study was to investigate which dimensions of organisational justice best predict job satisfaction and employee engagement of employees in Windhoek, Namibia. **Motivation for the study:** Poor service delivery is a concern within the service industry and this includes the banks and universities that operate in Windhoek. Having engaged employees will most likely improve the quality of service and customer satisfaction. **Research design, approach and method:** A cross-sectional survey design was used, employing questionnaires to collect data on the biographical details, organisational justice, job satisfaction and employee engagement of employees at a bank and university. The sample consisted of employees from a bank, Bank A (n=106) and administrative staff at a university (n=97) in Windhoek. **Main findings:** Significant predictors of employee engagement (work energy) were interpersonal organisational justice and intrinsic job satisfaction; significant predictors of employee engagement (work focus) were intrinsic job satisfaction and extrinsic job satisfaction. **Practical/managerial implications:** Managers and supervisors need to regularly assess, monitor and enhance employees' perception of organisational justice, job satisfaction and employee engagement. Improving organisational justice within the workplace will likely increase job satisfaction, employee engagement resulting in increased productivity and customer satisfaction. **Contribution/value –add:** The novelty of this study in Namibia, will add to already existing knowledge within Industrial/Organisational psychology, pave the way for future research and guide the development of interventions to keep employees satisfied and engaged in their work.

## **THE RETAIL SECTOR GROWTH, EXPANSION, EMPLOYMENT AND INCOME INEQUALITY: A CASE STUDY OF SHOPRITE AND PICK N PAY IN SOUTH AFRICA AND NAMIBIA**

Maciko Loyiso and Jerry Mathekga

The South African and Namibian economy is more liberalised, and there is a movement of firms from outside Africa to South Africa and Namibia. Some South African firms are operating in Namibia. According to the endogenous growth theory, economic growth can be attributed to initiatives, namely; investment in human capital, innovation and knowledge. This theory suggests that policies that hold openness, competition, change and innovation will promote economic growth. The retail sector is one of the sectors that have grown and expanded in South Africa and other parts of Africa. The sector has contributed to job creation in South Africa and Namibia. Most of the jobs created are non-standard with little benefits and lower wages. This paper argues that non-standard employment created generates and deepen income inequality and labour exploitation. The paper aims to provide a picture of the current state of income inequality at Shoprite and Pick n Pay, and identifies the main drivers of this situation. The paper uses the secondary and current data to analyse and highlight the income inequality at Pick n Pay and Shoprite. The results show that new forms of employment by Pick n Pay and Shoprite regenerate income inequality, exploitation and the division of labour in terms of job status. It also proposes a legislative framework which takes seriously the changes taking place in retail

sectors, and the need for a more effective regulatory framework to overcome insecurities experienced by retail workers as a result of different employment contract and income inequality.

## **NOBODY CAN REALLY AFFORD LEGAL SERVICES: THE FUTURE OF THE LEGAL PROFESSION IN NAMIBIA**

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Since March 1990, the Constitution of Namibia promises access to justice and justice for all, yet this idealized and bright outlook for the Namibian society feels like a distant dream today. Assuming that an average lawyer in solo practice bills his clients N\$700 per hour, the average Namibian will only be able to pay for one hour of legal services per week. These statistics, however rough, point to an alarming yet inescapable truth: Nobody (except for the privileged few) can afford legal services. To the countless, faceless Namibians who desperately and vainly seek legal advice every day, the constitutional promise of justice and justice for all sounds meaningless and cruelly cynical. How should the government and other stakeholders design the legal profession so as to make legal services and, ultimately, justice accessible to the greatest number of Namibians while preserving the profession's financial viability? From the outset, it must be recognized that the unaffordability of legal services is eminently a problem that is economic in nature. The predominantly economic nature of the problem means that its solutions lie less in the field of law than in the field of economics. Thus, this paper adopts a methodology that reflects that awareness. It is basically structured as a full-length, stand-alone review of the (mostly) economic literature on the costs of professional services. This paper strives to solve the relative unaffordability of legal services in Namibia. It consists of four sections. The first one looks at the law as a model for settling disputes and as an essential element of any functional society. It also offers a bird's-eye view of the legal profession in Namibia. The second part of the paper dissects the unaffordability of legal services in Namibia. The next section searches the scholarship on the legal profession for the various practical, down-to-earth solutions that have been put forward in other jurisdictions to take the edge off the prohibitive costs of legal services. Lastly, the paper suggests a set of solutions that Namibia can carry out in order to lessen the acute dilemma of unaffordable legal services.

## **THE EXPERIENCES OF THE SMALL MEDIUM BUSINESS ENTERPRISES IN THE EVERYDAY APPLICATION OF MATHEMATICAL LITERACY IN THEIR BUSINESS: A CASE STUDY AT KATIMA MULILO AND CHOTO OPEN MARKETS IN THE ZAMBEZI REGION, NAMIBIA**

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It has been observed that there is a sharp increase in the number of small business enterprises at Katima Mulilo Open Market, which has necessitated the building of the Choto Open Market. The mushrooming of small business enterprises has become a challenge in terms of space and the nature of mathematics used to effectively manage their finances. The data was collected through questionnaires, focus group discussions, observations and interviews from a purposive sample of 16 informants. Findings revealed that mathematical literacy is effectively used in the small businesses despite the level of mathematics that the owners of the small businesses have done. Mathematics is an interdisciplinary subject that can be applied in many fields such as business, education, entrepreneurship, trading, agriculture, health care delivery and host of other day – to – day issues (Tsafe, 2013; Ilukena, 2010 as cited in Mateya, Utete & Ilukena, 2016). A lot of our daily routine in the society today has one or two things to do with mathematics, as alluded, people need to interact when trading with one another they have to have mathematical ability to handle life transactions with efficacy. It is the responsibility of any government via the ministry of education to see it that it incorporates mathematics

literacy in their curriculum because of its importance to everyday life and national development. In order for an individual to be functional at an optimal level in the society they need to be literate in mathematics which encompasses competence in mathematics content, processes, knowledge and skills in handling situation faced by individual in daily lives (Edge, 2009 & Ozgen, Bindak, 2011 as cited in Tsafe, 2013). This implies that appropriately application of the mathematical literacy acquired from school by the owners small business enterprises would help them managing their finances effectively. As (Tsafe, 2013) found out that for any individual before becoming an entrepreneur he or she should be knowledgeable in mathematics hence all transactions and documentation fillings such as voucher, ledger and invoices requires the knowledge of mathematics. The assumption that some of the small business enterprises did not admit that they are mathematically literate hence they said that mathematics is a difficult subject. It is quite surprising that the majority of them effectively manage finances despite the minimal mathematics level they acquired at primary school level. The little mathematics learnt at both elementary and post primary education has some answers to some of the findings in this research paper such mathematics literacy is an agent of poverty alleviation and national development that triggered this research. This study has used a two – dimensional theory, namely the interdisciplinary and social constructivism theory. The interdisciplinary nature of mathematics gives answers to the everyday use of mathematics in the small business enterprises. The experiences of the owners of the small business enterprises are shaped by the theory of social constructivism, which maintains that by reflecting on our experiences they construct new experiences, knowledge and skills that are useful in this area of business. The qualitative and quantitative research designs were both used in this study. The case study was used for this study because it was an in – depth investigation of an individual sole’s traders that allowed the researchers to critically analyse their practices and helped to organise data for the purpose of reviewing the social reality at their workplace (Markets). Purposive sampling was used in this study, to select 16 informants from the two open markets in the Katima Mulilo Township, Zambezi region. The technique was used because it involves selecting certain units or cases “based on a specific purpose rather than randomly” (Tashakkori & Teddlie, 2003, p. 713; Palys, 2008). The data were collected from the 16 informants by using questionnaires, scheduled observations, focus group discussions and interviews. The four methods helped in cross checking of ideas and the emergence of themes or patterns. Descriptive statistics were also used to present and analyse the data including frequency tables. The data from the research instruments revealed that mathematics was effectively used in the small businesses despite the level of mathematics that the owners of the small businesses have done. The study further revealed that some owners of the small businesses make use of mental arithmetic strategies and number system to do calculations involving change, profit and loss. The mathematical literacy learnt at school is worthwhile in the day-to-day operations of their small business enterprises. Mathematics in small business enterprises is real reality in comparison to mathematics done in classrooms, which was paper and pencil. The successful trend of small business enterprises seemly would help in the alleviation of poverty.



# THEMATIC AREA:POPULATION AND HEALTH

## FACTORS ASSOCIATED WITH EXCLUSIVE BREASTFEEDING AMONG INFANTS IN NAMIBIA

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Breastfeeding is an important determinant of a child's growth and development. Modernization as well as the aggressive promotion and marketing campaigns of infant formula and other baby food have influenced the traditions of breastfeeding and this resulted in the increased use of bottlefeeding. The main aim of the article is to assess factors associated with exclusive breastfeeding among infants under 6 months using 2013 NDHS. Comparative statistics will be calculated using the Chi square ( $\chi^2$ ) test and one-way analysis of variance (ANOVA) where applicable. Binary Logistic regression analysis will be used to examine the relationship between the initiation time of first breastfeed ( $\leq 1$  hr =1 or  $>1$  hr=0), and feeding patterns (Exclusive breastfeeding =1 or not =0) and a number of characteristics that will be identified as having possible effects. Variables that are significant ( $P < 0.05$ ) on bivariate analysis will be analyzed by multiple logistic regression analysis using backward Wald selection method. Woman's age, her parity, size of child at birth and place of residence are some of the factors associated with exclusive breastfeeding for infants in Namibia. The results will be used to recommend interventions that will assist national nutrition program to better monitor feeding practices among infants.

## IS OLUFUKO FESTIVAL A OF NORTH-WEST NAMIBIA A FORM OF WORSHIP?

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This paper asserts the view that olufuko (girls' initiation) festival practice, as observed among the EaMbaanhu traditional community in northwest Namibia, is not a form of worship. The paper defines the concepts of olufuko and traditional worship, particularly among African traditional societies. In this paper the basic elements of olufuko/girls' initiation and religious worship were compared to establish or exclude any link. The empirical data was collected from the fieldwork conducted among girl initiates, parents of initiates, community elders, local cultural experts, religious leaders, olufuko festival goers and key informants, during the olufuko festival in Omusati region, in August 2016. Relevant data was collected by researchers, who accompanied the girl initiates throughout their routines from the time they wake up to the time they go to sleep every day, during the initiation process. Through the process of observation, the researchers were keen to see if critical elements of worship could be observed during the initiation process. During the duration of the olufuko/girls' initiation period of 5 days, no evidence of the practices that define a worship was observed. Instead, the researchers have identified the core elements which the initiates, the community elders and other key informants associated with olufuko as a cultural practice. The essence of olufuko is to inculcate the value of self-respect, honesty and the consolidation of their cultural roots and tradition.

## **THE HEALTH AND WELLBEING OF THE ELDERLY PEOPLE IN NAMIBIA**

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The world's population is ageing and projections show that this increase will continue. The effects of this global demographic change are predicted to result in an increase in mortality due to non-communicable diseases. This paper aims to investigate the determinant of health and wellbeing among older people in Namibia. The paper focuses on examining factors associated with experience/non-experience of non-communicable diseases among older people in Namibia using a logistic regression. The analysis is based on a national study on the wellbeing and living conditions of older persons in Namibia which was conducted among older person aged 60 years and older who are head of the households with a sample of 2716. About 50 percent of these reported that they are taking medication for high blood pressure, 13% are taking medication for arthritis and 8.3 percent taking medication for diabetes. The prevalence of older people taking medication for different kinds of non-communicable diseases is high for those living in urban than those in rural areas. The study concluded that aging is anticipated to put a lot of pressure on country's health system if measures are not put in place. The study therefore recommends that the effects of socioeconomic factors need to be addressed in policies that are designed to improve health among older persons.

## **AM I DISABLED? USING THE SIX SCREENING QUESTIONS TO DETERMINE DISABILITY IN KHOMAS AND KUNENE REGIONS OF NAMIBIA**

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The paper employed the six screening question (seeing, hearing, walking, remembering, self-care and communication) of the Washington Group (WG) in determine activity limitation in Khomas and Kunene. There is this increase awareness that in order to understand disability is should mainly be a focus of medical defect leaving out activity limitation and participation. In addressing this anomaly in identifying persons with greater risk in society in performing their daily activities/task or participation the goal was to gather information on the domains, seeing, hearing, walking, remembering, self-care and communication on daily activities. Data was collected from households within the Khomas and Kunene region respectively and results stated that with some difficulty a prevalence arte of 58.2% was obtained. With a lot of difficulty a prevalence rate of 31.9% was obtained and with unable to do a prevalence rate of 4.7% is reported, which supported the results of the 2011 Namibian Population Census. Results stated that there was a preponderance of the problems as reported by the domains and the independent variables with regard to the structure of the health care delivery system.

## **PARTNERSHIP MODEL FOR NURSES (HEALTH PROFESSIONALS) TO FACILITATE MALE INVOLVEMENT IN THE REPRODUCTIVE HEALTH CONTEXT**

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The need of development of the model for nurses (health professionals) to facilitate male involvement in the reproductive health in the study conducted in Oshikoto region was emanated. The target population was male and female partners attending health facilities and nurse managers that provided RH services. Focus group discussion; individual interviews were conducted until data saturation occurred. Participants were asked only one research question namely: What is (are) your perception of male partner in the reproductive health services? A type recorder was used to collect data and the data was transcribed verbatim. Data collected was analysed following Tech's eight steps. Coding was done by the researcher and independent coder. The

measures for ensuring trustworthiness proposed by Guba (Lincoln & Guba, 1985) were used as basis for ensuring reliability and validity. The method of theory generation, as explained by Chinn and Kramer (1995), was adopted and utilised in the current study in order to develop and describe a model partnership model for nurses (health professionals) to facilitate male involvement in the reproductive health context. This study was carried out in a sequence of four steps, namely analysis of concepts; construction of relationship statement; description and evaluation of model and guidelines for the operationalising of the model (Chinn & Kramer, 1995). It come out that in order to facilitate male involvement in the reproductive health context, should be done in five phases namely: situational analysis; establishment of partnership; management process; maintaining a conducive environment and termination & evaluation.

## **MODELLING SPATIO-TEMPORAL PATTERNS OF DISEASE FOR SPATIALLY MISALIGNED DATA: AN APPLICATION ON MEASLES INCIDENCE DATA IN NAMIBIA, 2005-2014**

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To infer about measles distribution patterns at constituency level, the analysis of data at constituency level is vital. However, in Namibia the measles data were available in aggregated format at regional and district levels over the period 2005 to 2014. This leads to a spatial misalignment problem if these data are to be analysed at regional level with the purpose of making decisions at constituency level. The main objective of this study was to use a multi-step approach of correcting for the spatial misalignment and then fit a spatio-temporal regression model within the Bayesian framework, using integrated nested Laplace approximation (INLA), to the spatially misaligned measles data in Namibia for the period 2005 to 2014. The number of people aged between 0 and 24, the percent of women aged 15-49 with educational level more than secondary, the percentages of children age 12-23 months who received measles vaccine, and the measles cases for each previous year were found to have significant association with the measles disease across the study period. We identified constituencies having elevated risk of measles. From 2009 to 2014, it was noted that the measles risk followed an upwards trend with 2009 and 2014 as remarkable peaks. Consequently we recommended geographical targeted intervention, prevention and control strategies based on these findings.

## **STRATEGIES AND SOURCES FOR MANAGING HIV/AIDS STIGMA: MEN'S RESISTANCE IDENTITIES WITHIN A DYNAMIC CONTEXT, KAVANGO REGION, NAMIBIA**

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Through the lens of the socio-cultural changes that have taken place in Namibia in recent years, the study seeks to explore heterosexual men's experiences of HIV related stigma in a dynamic context. The study adopted a qualitative approach in an in-depth case study involving repeat semi-structured interviews and written solicited diaries with 17 HIV-positive heterosexual men who were recruited through snowballing, in two study areas: Rundu constituencies and the Ndiyona constituency in the Kavango east region in north-eastern Namibia. The findings revealed that stigma resistance for the men was about refusal to allow stigma to interfere with their self-esteem or self-confidence; overcoming the fear of stigma was about challenging the societal negative responses and sometimes even changing these negative responses into wider societal acceptance by drawing on various sources and strategies for stigma management or resistance such as: religion and faith; Antiretroviral Treatment (ART); support (i.e. from HIV counselling, family members, friends and HIV support groups); disclosure and openness (i.e. the rewards of educating others about HIV/AIDS including public disclosure or activism); selective disclosure, non-disclosure/silence and avoidance; including ways of explaining HIV infection. Unexpectedly, the respondents depicted 'resistance identities' (Castells, 1997:8), which were overwhelmingly positive. Consequently, non-rigid hegemonic masculine identities were

strengthened or restored while the rigid or harmful masculinities were challenged when the men were able to mobilize these resistance identities. The key argument of the study is that HIV/AIDS stigma, though persisting is escapable and can be managed, challenged and resisted. Moreover, it is dynamic, non-static and changes over time. Significantly, the study locates stigma management within a broader socio-cultural context and argues that the men's resistance identities have been shaped by the shifting meaning of HIV/AIDS; religion and faith; the changing religious context; the changing medical regime (i.e. the availability of ART and counselling) and the influence of masculinity. Against this background, the study concludes that an understanding of the strategies and sources men draw on to resist HIV related stigma can assist intervention programs to develop effective strategies which can lead to the reduction of stigma at personal and community level.

## **WHAT COULD BE DONE TO IMPROVE THE OCCUPATIONAL HEALTH AND SAFETY IN THE CONSTRUCTION INDUSTRY OF WINDHOEK, NAMIBIA?**

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Globally, the construction industry is regarded as a very dangerous industry due to the labour-intensive nature of the work resulting into a high rate of occupational accidents, injuries, diseases and fatalities. In Namibia, the occupational health and safety (OHS) status of workers in construction industries remains a challenge primarily due to the dearth of studies that investigate the health and safety of workers. The objectives of this study were to investigate the status of occupational health and safety in the construction industry in Windhoek, Namibia, with a view to recommend interventions that would improve occupational health and safety of workers in the targeted sector. A quantitative cross-sectional study was conducted among 549 participants from 13 construction sites that were operating at the time of conducting the study. Data were collected by means of a self-administered questionnaire. SPSS version 23 was used to analyse data. The study identified a number of different strategies to be provided on construction industry for OHS improvement such as OHS programme implementation, training of workers on OHS aspects, provision of medical services to construction workers, adequate provision of welfare facilities, and Personal Protective Equipment (PPE) provision. The study has proven that there is a need to improve the OHS in the construction industry to prevent occupational accidents, injuries, fatalities and diseases. The researchers developed the practical guidelines which could be useful if implemented in construction sites to improve the OHS in the construction industry.

## **SEROLOGICAL SURVEILLANCE OF MALARIA IN THE LOW TRANSMISSION SETTING OF WESTERN ZAMBEZI REGION NAMIBIA**

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Namibia has successfully reduced its annual malaria incidence by 90% from 2001-2014 and has targeted elimination by 2020. However recent, unexpected, outbreaks in northern Namibia may threaten this goal. Therefore new diagnostic and surveillance methods are urgently needed to track transmission intensity patterns and predict the geographic location of outbreaks. Current methods have limited utility due to challenges health-seeking behavior; case reporting and the fact that they can only capture information at one

time point. Malaria serological studies are a potentially useful surveillance tool in these areas as they provide information on cumulative transmission patterns over time. In addition, these assays are simple and inexpensive to perform. This study aimed to describe the serologic profiles of 289 individuals, using the markers, Apical membrane antigen (AMA-1), which shows historical incidence of more than one year and Merozoite surface protein (MSP-1), which shows more recent malaria exposure of less than one year as compared to current infection (RDT). Individuals enrolled included cases and corresponding age, gender, and geographically matched controls in the low transmission area of western Zambezi region. They were followed up 6-12 months, and 12-18 months after initial entry in 2015 to collect serum and dried blood spots via finger prick for ELISA. Preliminary serological results have confirmed that malaria exposure has declined over the last few years. AMA-1, had the highest prevalence amongst individuals (12.8%) showing higher numbers of infection years ago while MSP-1 had a lower prevalence (6.2%), indicating less people having had malaria recently. Finally RDTs which show the current infection had the lowest prevalence of 2.7%. These results confirm that malaria prevalence has decreased over the last few years and that active surveillance using serology may be a possible tool in the fight against malaria.

# THEMATIC AREA: INDIGENOUS KNOWLEDGE SYSTEMS

## ANTIBACTERIAL ACTIVITY OF NAMIBIAN MEDICINAL PLANTS AGAINST LABORATORY DIARRHEAL STRAINS

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Namibian people living in rural areas and resource poor settlements heavily rely on ethno- medicinal plants to treat diarrhea. However, there is limited scientific evidence of the antibacterial activity of some of the traditional medicinal plants. Such evidence adds value to this indigenous knowledge and can be used to promote their mainstream use. Different parts of *Ziziphus mucronata*, and *Terminalia sericea* are used in Omusati region to treat diarrhea and other ailments. Hence this study was conducted to document the Indigenous Knowledge on the use of *Ziziphus mucronata*, and *Terminalia sericea* and to determine their antibacterial activity against laboratory strains of *E. coli*, *Shigella boydii*, *Staphylococcus aureus* and *Listeria monocytogenes*. Antibacterial activities were determined by disc diffusion method at 250, 500 and 1000 µg/ml on Mueller- Hinton agar and Minimum inhibitory concentration by broth dilution method in Nutrient broth at 1000 to 0.003 µg/ml. Both organic and aqueous extracts of *T. sericea* showed broad spectrum antibacterial activity against diarrheal pathogens. The highest observed antibacterial activities was for organic extracts of *T. sericea* against *S. boydii*; with a concentration dependent effect of ( $8.7 \pm 0.58$ ;  $15.3 \pm 0.57$  and  $17.7 \pm 2.08$ ). Organic extracts of *T. sericea* also showed the lowest MIC of 62.5 µg/ml against *S. aureus*. This study showed that Indigenous Knowledge on medicinal plant treatments for diarrhea in Omusati region is rational, however toxicity assays should be conducted before recommending their uses in resource poor settings and in communities that prefer to use traditional medicine over allopathic medicine.

## ANTIMICROBIAL ACTIVITY OF TWO NAMIBIAN PLOCAMIUM SPECIES

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The main objective of this study is to determine if red marine algae; *Plocamium cornutum* and *Plocamium rigidum* collected along Namibian coastline have any activity against common pathogens. *Plocamium cornutum* and *Plocamium rigidum* collected from Luderitz and Henties Bay, Namibia, were identified and analysed for antimicrobial activity. Dried *Plocamium* extracts were dissolved in water, hexane, dichloromethane, ethanol and chloroform respectively and tested for antimicrobial activity against 12 bacterial pathogens, namely; *Escherichia coli*, *Staphylococcus aureus*; *Staphylococcus Saprophyticus*, *Pseudomonas aeruginosa*, *Streptococcus pyogenes*, *Proteus mirabilis*, *Listeria monocytogenes*, *Shigella spp.*, *Salmonella*, *Enterococcus faecalis*, *Candida albicans* and *Epidermidis*. Screening confirmed that water extracts showed no activity in all the pathogens as secondary metabolites are insoluble in water. The remaining solvents had varying degrees of microbial activity. This study established that chloroform extracts showed the greatest activity amongst the five different solvents that were used. Minimum inhibitory concentration of 10 µg/ml of standard ampicillin for antimicrobial test had no activity against *S. epidermidis* whilst MIC of 10 µg/ml of *P. cornutum* extracted in chloroform recorded a zone of inhibition (ZOI) of  $6.26 \pm 0.07$  mm. *P. rigidum* in ethanol showed a ZOI of  $6.03 \pm 0.25$  mm against *listeria monocytogenes* while the standard ampicillin had no activity. *P. rigidum* in (ethanol) and *P. cornutum* (in chloroform) are evidently more active against *listeria monocytogenes* and *S. epidermidis* respectively than standard ampicillin. The positive activity shown by *P. rigidum* and *P. cornutum* against common pathogens is a motivation to provide funding to widen the scope to include other species of marine algae.

## TOXICOLOGICAL EVALUATION OF *COLOPHOSPERMUM MOPANE* EXTRACTS *IN VIVO* TO DETERMINE THEIR SAFETY FOR POTENTIAL DEVELOPMENT AS AN ANTI-CANCER COMPLEMENTARY MEDICINE

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Cancer has been on the increase in Namibia in recent years, the most being Kaposi sarcoma and prostate cancer in men, cervical and breast cancer in women. Cases originating far from Windhoek are usually diagnosed late resulting in a poor prognosis, and are from resource poor settings. Alternative treatment options for such patients include medicinal plants. Traditionally used medicinal plants have been used for generations for various ailments in Namibia and studies have shown they are a reliable source of bioactive compounds. However, concerns about their safety continue to prevent their widespread use. *Colophospermum mopane* is commonly known as Mopani (English), Omutati (Herero) or Omufyati (Kwanyama) and is native to southern Africa. Its many uses include treatment of inflammation, subcutaneous cellular disorders and pain relief. Previous studies have revealed the presence of alkaloids, triterpenoids, coumarins and flavonoids. In addition, *in vitro* studies showed intermediate anticancer activity against MCF-7 breast cells (IC<sub>50</sub> 30.5 µg/ml) and low cytotoxicity (> 100 µg/ml) against human lung fetal fibroblast cells. The *in vivo* toxicity of *C. mopane* extracts was investigated using the acute toxicity test in Balb C mice. The mice (n=4/group) were fasted for 6 hours before oral administration of the plant extracts with doses 4500-6500 mg/kg and observing the animals for 24 hrs. Mortality was recorded per group and plotted against log extract concentrations in a probit graph. Acute toxicity results indicated an LD<sub>50</sub> value of 5270.3 mg/kg showing that the *C. mopane* extracts were nontoxic and have a high safety profile as a treatment for cancer and other diseases. It is recommended on this basis, that clinical trials be conducted on *C. mopane* extracts for development as a complementary medicine.

## OSHIKUNDU DREGS: ENERGY USED OR ENERGY WASTED?

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*Oshikundu (Ontaku)* is a non-alcoholic fermented beverage comprising of pearl millet (*Pennisetum glaucum* (L.) R. Br.) meal, sorghum malt (*Sorghum bicolor*) and water. It is brewed almost daily in more than half of Namibian households. It has not been manufactured for formal commercial markets. Thus, it is primarily a household craft beverage. One of the limitations to the formal commercialisation of this drink is the absence of standardised flow processes to make it. With no straining, filtration or other appropriate separation steps and limited gelatinisation of starch in the flours used, Oshikundu is a suspension that can have a large amount of fermented flour particles floating and most collect and sediment at the bottom due to gravity. For instance, the ingredient ratio and processing conditions such as temperature at which Oshikundu is brewed are not uniform from household to household and even between different brewers in the same household. This results in the differential consistency or viscosity of Oshikundu and thus a lighter layer forms on top and a heavier layer (dregs) settle at the bottom. This also results in the differential preference of these layers or their mixture among consumers. Some opt to drink the lighter layer only and some may opt to shake Oshikundu before drinking it to mix the layers. Since dregs are primarily made up of starch, a concentrated form of energy, the question arises as to what happens to the dregs when not consumed? Can formulation and/or processing conditions be optimised to maximise the use of this starch that sediments in Oshikundu? One can look at a way of archiving a pre-gelatinization more efficiently compared to the current brewing practise of oshikundu. Also one can look at an efficient use of ingredients for the reduction of starch sedimentation and thus amount of dregs in Oshikundu.

## ANTIMALARIAL ACTIVITY OF CRUDE EXTRACTS FROM *GUIBOURTIA COLEOSPERMA* AND *DIOSPYROS CHAMAETHAMNUS* IN *P. BERGHEI* INFECTED MICE

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Countries in Southern Africa have made much progress in fighting malaria including Namibia which is on the verge of eliminating malaria by 2020. Some communities however, prefer to use plant-based therapies which if ineffective, may impede the elimination process of the disease. This study was conducted to validate two antimalarial medicinal plants using a small animal model. Root extracts of *Guibourtia coleosperma* and *D. chamaethamnus* were prepared in distilled water (1:20 w/v), and assessed for suppressive and prophylactic antiplasmodial activities. The extracts were also evaluated for their toxicity in non-infected mice using dose escalation with a starting dose of 300 mgkg<sup>-1</sup>. Schizonticidal activity of *D. chamaethamnus* and *G. coleosperma* at 800 mgkg<sup>-1</sup>, produced 9.01 and 18.61 % chemosuppression, and survival time was increased by 8.3 and 25 %, respectively. Prophylactic activity suppressed parasitaemia by 56.13 and 55.48 %, and increased survival by 155.6 and 22.2 %, respectively. Oral administration of extracts at the highest dose of 2000 mgkg<sup>-1</sup> was nontoxic. The plant extracts possessed antiplasmodial activity, and were more effective as prophylactics rather than treatments. Their use in combination with other plants for antiplasmodial activities as used in an ethnomedicinal setting should be assessed to increase efficacy.

## PROTEASES PRODUCTION AND CHARACTERIZATION OF ENTEROBACTERIACEAE SPECIES FROM NAMIBIAN INDIGENOUS FOOD AND BEVERAGES

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Traditional foods are recognized for their important role in both physical and cultural nourishment in indigenous communities worldwide. The objectives of this study were to screen different microbial isolates for their protease production and to partially characterize protease(s) produced by these isolates. Eighty three *Enterobacteriaceae* isolates have been isolated from 13 traditional food and beverage samples from // Karas region, Namibia. They were screened for protease(s) production using milk digestion test, out of which twenty two produces protease(s) and the protease activity was measured spectrophotometrically at 450nm. Protease(s) positive isolates were identified using API 20 E kit and identified as: *Enterobacter cloacae*, *Enterobacter aerogenes*, *Klebsiella oxytoca*, *Pantoea spp.*, *Rahnella aquatilis*, *Serratia ficaria* and *Raoultella ornithinolytica*. Protease activity ranged between 0.8±0.03 unit/ml (*Enterobacter aerogenes*<sup>2</sup>) to 5.5±0.02 units/ml (*Serratia ficaria*). Protease activity was found to be high at temperature 40 °C and pH 6.39. Ethylene diamine tetra acetic acid (EDTA) was found to inhibit the activity of proteases from most of *Enterobacteriaceae* isolates. A probability of 0.05 (p> 0.05) and the level of significance of 5% was used because the data was considered to be normally distributed. The study found that there was no significant differences in the protease activity of protease(s) produced by *Enterobacteriaceae* isolates after exposed to inhibitors (EDTA), pH and temperature changes. The results from this work improved our knowledge on the safety of traditional food and beverages by identifying microbial species that might occur/contaminate during the production and storage of traditional food and beverages at household level which has impact on the communities overall health and wellbeing status.



## **AN EXPLORATION ON THE POTENTIAL OF INDIGENOUS FLOURS IN SUSTAINABLE CULINARY INNOVATION OF DISHES IN ZIMBABWEAN FOOD ESTABLISHMENTS**

Patricia Mumbengegwi, Clotildah Kazembe and Magaret Nyarota

Sustainable indigenous resources such as traditional grains are being underutilized for culinary innovation in Zimbabwe. This has contributed to mundane dishes, use of unsustainable ingredients and limited menu variety. Despite their much publicized health benefits, traditional grains are marginalized. These grains are varied, easily cultivated in most regions of the country, have long shelf lives and locals have mastery in processing them. However, the same limited traditional flour dishes and more of foreign flour products are served and promoted in most of the country's food establishments. Failure to take advantage of these traditional flours as a vehicle for sustainable menu innovation may result in the neglecting of culinary heritage perpetuation, loss of unique internationally competitive cuisine and propagation of menu monotony. Using the mixed methodology, this study sought to examine the potential of indigenous flours in sustainable innovation of dishes in Zimbabwean food establishments. This research sought to provide insights on possible contributions to menu innovations through the use of traditional flours. This research also sought to address the dearth of studies on traditional ingredients in Zimbabwe's food sector. Findings indicated that indigenous grains such as millet, rapoko and sorghum thrive despite the severity of climate change. An increase in the production and use these grains may benefit local communities socioeconomically. Flours produced from these grains though lacking in gluten exhibit some desirable qualities for baking and cooking. Results also demonstrated that indigenous flours can be used innovatively to create products that are beneficial to health, such as diabetic and anti-celiac baked goods, hybrid dishes like blended grain pap, cross cultural dishes such as sadzagne and infused sadza. Recommendations included packaging, education, marketing and promotional strategies.

## THEMATIC AREA: ENVIRONMENT

### FIELD ESTABLISHMENT, SURVIVAL AND YIELD OF *MORINGA OLEIFERA* AND *MORINGA OVALIFOLIA* IN SEMI-ARID ENVIRONMENT: A CASE OF CENTRAL NAMIBIA RANGELAND

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The objectives of this study were to compare the growth rates, survival rates and leaf biomass yields of *Moringa oleifera* and *Moringa ovalifolia* grown in Central Namibia rangeland. This part of Namibia being semi-arid, the growing of drought resistant fodder trees to aid in the provision of animal fodder or supplement is essential and paramount to livestock farmers. It is upon this background that both *Moringa* species were grown to evaluate their growth and survival rates as well as leaf biomass yields. These fodder plants may be used to boost the animal production sector of Namibia if they are proven to withstand the harsh environmental conditions, namely, very cold winter and constant drought. The results of statistical analyses revealed that *M. oleifera* and *M. ovalifolia* growth rates, survival rates and leaf biomass yields were significantly different ( $P < 0.05$ ) even though they are from the same family and were grown under the same conditions. Thus, *M. oleifera* grew faster (224.9 cm and 281.45 cm) in heights and yielded more leaf biomass (482.933 kg/ha/annual and 297.6 kg/ha/annual) in the two summer seasons (2014/2015 and 2015/2016), respectively than *M. ovalifolia*, which heights were 78.8 cm and 113.2 cm and yields of 94.669 kg/ha/annual and 76.806 kg/ha/annual correspondingly for the indicated seasons although *M. ovalifolia* is native of Namibia. For survival rates, *M. ovalifolia* had higher survival rate (81.25%) after winter in the first season (2014/2015) than *M. oleifera* (70.83%); however, *M. oleifera* (97.50%) surpassed *M. ovalifolia* (82.69%) in the second season (2015/2016) due to its faster root-system establishment. Therefore, *M. oleifera* would serve as a better alternative for improving rangelands' productivity under these adverse climatic and environmental conditions since it can produce enough biomass and has a higher survival rate after winter than *M. ovalifolia*.

### COMPOSITION, DIVERSITY AND ABUNDANCE OF BEES (HYMENOPTERA: APOIDEA: APIDAE: ANTHOPHILA) IN AGRICULTURAL LAND USES OF NORTH-CENTRAL NAMIBIA

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Bees are essential pollinating insects in agroecosystems and their product, honey, is recognized as a high-valued indigenous natural product. Diversity of pollinating insects is affected by altering natural habitats to agriculture and urbanization. Equally, the potential value of agroecosystems to support species survival is often ignored. The study aims to assess influences of three land uses: subsistence crop fields; conventional research field and urbanization on diversity and abundance of bees. Line transects and purposive sampling techniques were used to survey bees using a combination of visual observation, sweep-nets and pan traps. There were 657 bee individuals belong to 5 species, two families and 5 tribes (Apidae: Apini, Xylocopini, Anthophorini, Meliponini and Megachilidae). Number of species (5 species, 429 individuals) was higher in UNAM Ogongo research field, followed by subsistence crop fields (4 species, 186 individuals), while Ongwediva urban area has the lowest (3 species, 6 individuals). Bees in UNAM Ogongo research field were

dominated by Meliponini tribe (121 individuals) while *Apis* sp. were surprisingly the lowest (31 individuals). *Xylocopa* sp. was the highest in subsistence crop fields (119 individuals). Diversity of floral resources was higher around UNAM Ogongo than in other agroecosystems, therefore supported more bees. A low number of *Apis* sp. populations have direct implication on beekeeping initiatives. Nevertheless, high abundance of bees in UNAM Ogongo research field could suggest that diverse crops and ornamental plants in crop fields may act as a refuge for higher value insect taxa. The study suggested a detailed research for informed decision making.

## PARASITIC PLANTS OF NAMIBIA

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Parasitic plants are common in many agricultural settings, and often play major roles in the livelihoods of Namibians. Some parasitic plants are frequently used as food and medicine, while others such as *Striga* and *Orobanch*e are serious agricultural pests. Here, we explore and describe three major parasitic groups that occur in Namibia including *Hydnora* species, *Striga* species and Mistletoes (Loranthaceae and Viscaceae) species by integrating scientific information with indigenous knowledge. *Hydnora* species are interesting due to their subterranean nature emerging above ground only when flowering. Fruits of *Hydnora* can be consumed and roots have been used traditionally for treatment of certain ailments. In addition, some *Hydnora* species are often found in mining areas in Namibia, threatening the survival of these species. Species of the Mistletoes provide shelter for birds and small mammals and can play important roles in structuring plant and animal communities by shifting competitive urge of dominant plant species. Additionally, extracts from Mistletoes can be used to treat or manage various health problems such as hypertension, *diabetes mellitus*. Certain *Striga* species such as *Striga asiatica* often parasitize maize plants, a staple food for many Namibians, with devastating economic impacts. Yet, despite the important roles that parasitic plants play in the livelihoods of Namibians, many aspects of parasitic plants remain unknown including host-plant interactions, pollination biology and ecology, especially in Namibia. Tapping into indigenous knowledge is an effective way to expand our knowledge on parasitic plants that may open avenues to conserve parasitic plant biodiversity, gain insights in effective management efforts of problematic parasites and medicinal value of parasitic plants in Namibia.

## CARNIVORE CONSERVATION AT LIVESTOCK/WILDLIFE INTERFACE IN NORTHERN BOTSWANA

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The management of livestock, biodiversity and other rangeland resources at the livestock/wildlife interface presents a challenging scenario in the integration of development and environmental conservation. As a result, biodiversity driven livelihoods strategies have become more vulnerable to natural disasters, leading to increasing levels of poverty, widespread land degradation and loss of biodiversity. One of the main challenges in managing natural resources at the livestock/wildlife interface in northern Botswana is quantifying the effects of carnivore predation on livestock on pastoral farmers' livelihoods and quantifies the effects of mitigation strategies on the population dynamics and conservation of carnivores. The challenge intensifies because carnivores are a source of revenue to government through tourism and can be good indicators of ecological integrity since their successful conservation can enhance biodiversity benefits. Despite this positive feedback to ecosystems and economic benefit at national level, they are also a source of negative economic feedback to communities residing near protected areas when they prey on their livestock. The study attempts to model/predicts an environment where livestock production and carnivore conservation can co-exist at the

livestock/wildlife interface using ecological, geostatistical and econometric modelling integrated with conditional probability functions. The preliminary results show that with current situation the conflict (depredations) is significantly affecting farmers' livelihoods and this is further fuelled by inadequate livestock markets and low prices that seem to promote many uncontrolled livestock. Landscape attributes and environmental factors are also contributing to carnivore predation on livestock. The models predict that a co-existence point could be reached if the wild and domestic carnivore prey base distribution and abundance are balanced. The preliminary results show how an integration of science, Geographic Information Systems, remote sensing and mathematical modelling can help in predicting potential sustainable management of natural resources.

## THEMATIC AREA: HEALTH

### **EVALUATION OF LOOP-MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) AS A SURVEILLANCE TOOL FOR THE DETECTION OF ASYMPTOMATIC LOW-DENSITY MALARIA IN THE ZAMBEZI REGION OF NAMIBIA**

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A significant decline in malaria cases in Namibia over the past decade has led to the country to target elimination of malaria within its borders by 2020. However, as malaria cases decrease, low-density asymptomatic infections which contribute to onward transmission have been reported to make up to 70 - 80% of the total number of malaria cases. This poses a challenge for active surveillance of asymptomatic infections as World Health Organization recommended Rapid diagnostic tests (RDTs) do not detect parasite at density (<50-100 parasites/ $\mu$ L). These cases when undetected, can act as reservoirs for the spread of malaria. There is an urgent need for highly sensitive diagnostic tools for surveillance. In this study, a cross-sectional survey was performed in the catchment areas of six randomly selected health facilities in the low transmission area of western Zambezi in Northern Namibia. A total of 2017 individuals were tested using RDTs as well as highly sensitive molecular tools nPCR and LAMP (loop mediated isothermal amplification), 17 were RDT positive (0.79%), 26 nPCR positive (1.3%) and 43 individuals were LAMP positive (2.1%). PCR and LAMP detected about 1.6 fold more and 2.7 fold more the number of cases detected by RDTs respectively. Using nPCR positivity as gold standard, the calculated sensitivity and specificity were 3.85% and 99.2% respectively for RDTs and 100% and 99.15% respectively for LAMP. Although, a definitive gold standard such as high volume qPCR, was not used, a high proportion of asymptomatic infections in the study were missed by RDT. In addition, LAMP may be more sensitive than PCR, easier to run and hence has potential in active surveillance and mass-screening programmes in low transmission settings. It is recommended that reactive case detection should be used as the main surveillance tool together with LAMP to detect and treat malaria in low transmission settings.

### **DEVELOPMENT OF A QUALITY IMPROVEMENT TRAINING PROGRAMME FOR HEALTH PROFESSIONALS IN THE MINISTRY OF HEALTH AND SOCIAL SERVICES IN NAMIBIA**

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The presentation will describe steps followed to develop a training programme for health professionals to facilitate quality health care and services delivery in the health facilities. It aims to empower health professionals with knowledge, skills and abilities to enhance quality health care delivery. The difficulties echoed and experienced by health professionals in rendering quality health care delivery cannot be overlooked as most had not received any training in quality assurance and quality improvement components. Without appropriate training and empowerment, health care delivery would continue to yield unsatisfactory. This process was done in four phases as illustrated in the methodology. **Phase 1:** The first phase undertaken in this study had two objectives. The first objective focused on the health facilities to understand the status of existing

quality improvement and quality assurance. A checklist was administered to the management members to confirm the approaches regarding quality health care delivery in the health facilities. The second objective aimed at describing the experiences of health professionals about quality improvement and quality assurance in the health facilities with the view to improve quality health care delivery. In this phase, the individual interviews and FGD with health professionals and managers were conducted. The first objective revealed loopholes in the availability of policies and guidelines; leadership to facilitate quality health care delivery; inadequate and inappropriate health system infrastructure. Objective 2, five themes and 18 sub-themes were identified. The themes revealed that the participants experiences lack of availability of guidelines and structure to facilitate QI and QA; inadequate management of resources; inadequate interpersonal relationship between the health workers ; inadequate understanding of QI and QA and lastly inadequate research and information, monitoring and evaluation and indicators of monitoring and evaluation. **Phase 2:** The conceptual framework of this study was based on the Practice Oriented Theory by Dickoff (1968, p. 434), which helped to explain the concepts used in developing quality improvement training programme for health professionals in the health facilities. Dickoff (1968, p. 438) Practice Oriented Theory consists of the agent, recipients, context, procedure, dynamics and the terminus. In this study the agent is the quality specialist; recipient are health professionals, context is health facilities; dynamic are challenges experiences by health professionals; procedure is training programme and terminuses is knowledgeable, skilful health professionals in quality health care delivery. **Phase 3:** During the development of quality improvement training programme, two main theories were adapted. The prominent was a model by Meyer and Van Niekerk (2008, p. 54), which was adapted to guide the process of developing the training programme. The Kolb's Experiential Learning Theory, which explains the learning process and styles of developing knowledge through experiences. The educational programme includes the purpose/aim; objectives, structure/design; process (facilitation process); implementation process and evaluation of the programme. **Phase 4:** Phase 4 of the study focused on developing the guidelines for implementing the training programme. The guidelines in this study were developed to direct and promote effective implementation of the training programme. They are the guiding document outlining the process, activities and issues required to implement the programme. The purpose of the guidelines in is to assist the implementers and beneficiaries on steps to be followed in implementing the training the programme. **Phase 5:** Phase five was focuses on the evaluation of quality improvement training programme. To achieve that, two (2) practical frameworks were adopted in this study namely the United Nations Population Fund (UNFPA, 2013) based on four stages, which were used to guide the team of evaluator or facilitator on how to conduct the evaluation. Conclusions, based on the evaluation programme by the participants revealed that quality improvement training programme for health professionals in Ministry of Health and Social Services is needed. It was recommended that the educational programme should be tested within in which context the study was.

## **ASSOCIATION OF HUMAN PAPILOMA VIRUS (HPV) 16 AND 18 IN BREAST CANCER BIOPSIES IN NAMIBIA**

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Cancer is a growing global health concern with cancer deaths expected to exceed deaths from AIDS by 2040 globally. This is largely due to increased exposure to risk factors which include smoking, excessive drinking, poor diets, age, genetics, UV radiation and biological factors such as infection by viruses. Viral infections such as human papillomavirus (HPV) are reported to be responsible for up to 20% of cancer deaths in low- and middle-income countries. HPV has been associated with several types of cancer and may be one of the etiological agents behind the increased number of breast cancer cases in Namibia. This study was conducted to investigate the presence of HPV in breast cancer cases and whether there was a possible association between HPV and breast cancer amongst Namibian women. DNA was isolated from 47 formalin fixed paraffin embedded biopsy tissues, 22 breast cancer positives and 25 breast cancer negatives obtained from the Namibian Institute of Pathology, and analyzed for HPV 16 and HPV 18 sequences using PCR. HPV 16 was detected in 86.3% of breast cancer positive samples whilst HPV18 was found in 81.8%. In contrast, only 36% of breast cancer negative samples had HPV 16 whilst 48% had HPV 18. In total 86.6% of the breast cancer positive samples were co-infected with both HPV 16 and 18 and only 32% of breast cancer negative samples were also co-infected. Infection with HPV 16 or 18 increases risk of cervical cancer, and possibly breast cancer. The results suggest HPV may contribute to the increasing breast cancer statistics in Namibia. This study is important as the first study to be conducted in Namibia linking HPV and breast cancer and it is recommended that it the study be continued with a larger sample size to power the study to make the findings statistically significant.

## **DISASTER VULNERABILITY ASSESSMENT FOR THE KINGDOM OF BHUTAN'S POPULATION**

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Kingdom of Bhutan is prone to flooding, epidemics and earthquakes. The main objective of this article is to outline the methodology for the assessment of vulnerability of the Bhutanese population. Specific focus is placed on the data availability to assess vulnerability in terms of water/sanitation/hygiene (WASH), social and economic vulnerability. These objectives were achieved through a combination of the calculations and literature review. The following vulnerability indices were calculated: the WASH vulnerability index, social vulnerability index and economic vulnerability index. The latter three indices are for the Bhutanese population. Raw statistical data were extracted from the official statistical data published by the Bhutanese government and the Centre for Bhutan Studies. International databases from the following bodies were also used: World Health Organisation, World Bank, United Nations and Index Mundi. The WASH vulnerability criterion decreased from 0.241 in 2000 to 0.128 in 2013. The social vulnerability criterion increased from  $3.14 \times 10^{-3}$  to  $3.35 \times 10^{-3} \text{ year}^{1.5} \times \text{USD}^{-1}$  between 2000 and 2003; and then decreased to  $1.87 \times 10^{-3} \text{ year}^{1.5} \times \text{USD}^{-1}$  between 2003 and 2013. The economic vulnerability criterion increased from 60.55  $\text{USD} \times \text{year}^{1.5}$  in 2000 to 208.71  $\text{USD} \times \text{year}^{1.5}$  in 2013. There was a strong negative correlation between WASH vulnerability of the Bhutanese population and its economic vulnerability (Pearson correlation coefficient = -0.9597). There was a strong positive correlation between WASH vulnerability of the Bhutanese population and its social vulnerability (Pearson correlation coefficient = 0.8832). Both correlations were statistically significant at 5 % level of significance ( $p$ -value =  $1.2 \times 10^{-5}$  and 0.000706, respectively). Results of the study indicate that underlying variables controlling the economic and social vulnerability of the Bhutanese population, e.g. the gross domestic product and the rate of urbanisation, must be well managed and/or policies must be adapted to trends in these variables to decrease the WASH vulnerability.

## **THEMATIC AREA:GENDER**

### **TOWARDS A SUSTAINABLE MOBILE PHONE GENDER- INCLUSIVE DEMOCRACY: EXPLORING CIVIC ENGAGEMENT PRACTICES OF RURAL YOUTH IN THE NORTHERN NAMIBIA**

Sadrag Panduleni Shihomeka

Namibia has seen a tremendous increase in the mobile phone subscriptions in the last five years (2012-2016). The number of mobile phones in Namibia is also reported to be more than the country's population. Over 43% of the population in Ohangwena are said to have mobile phones. This paper explored the everyday gender-usage of mobile phones by the youth for civic engagement in the Ohangwena region. Using a 7 months ethnographic participant observation, 65 semi-structured interviews with the youth aged 15-35 years as per the African Youth Charter and photo documentation of their mobiles, the results reveal that more male youth own and use mobiles for civic engagement activities such as chatting with their political representatives, debating equal distribution of resources in the region, use social media for political news and networking for business purposes in Namibia. The study further reveals that majority of the female youth use mobiles for private communication rather than civic engagement as opposed to males. More males' youth were also found to have more mobile social media applications in their mobiles than females; majority of the youth in semi-urban areas have smartphones compared to very few in remote areas; less privileged and marginalised youth have mobiles or no mobiles and equally.. The paper conclude that cultural barriers, education level, digital literacy, employment status, constituency level of development, mobility and digital divide hinders the use and ownership of mobiles by both male and female youth. And that there is a gender imbalance in civic engagement practices among the youth when using mobiles. It is recommended that community digital literacy programs and youth engagement platforms should be developed together with the regional councils to sensitise the youth on the sustainable use of mobiles to enhance inclusive gender-participation in civic activities.

### **PERCEPTION OF TEENAGE PREGNANCY AMONG BOYS IN NAMIBIA**

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Literature states that teenage pregnancy affect the boy child's education, health, social and economic well-being. The aim of this study is to understand the perceptions of teenage boys regarding pregnancies and the role of their socio-cultural environments in putting them at risk of impregnating. Purposive sampling was used for the study and a questionnaire was administered to the boys and focus group discussions were also conducted. This study was conducted among boys between 15 and 22 years and sampled 602 in schools and out of school boys, residing in both urban and rural areas in the 14 regions of Namibia. Boys who impregnated and those who did not impregnate where included in the study. The research finding shows that despite boys knowing about the consequences of teenage pregnancy, they still engage in multiple sexual relations. Over 69% of the boys stated that they willingly had sex for the first time without any external influence or pressure. Other motivating factors to engage in sex are the influence of the media, alcohol, tobacco and drugs, which inhibits them when having to practice safe sexual intercourse. Majority of the boys indicated that they knew how to use a condom, and condoms were seen to protect against HIV and STI and unwanted pregnancies, despite this knowledge, inconsistent condom use remains a challenge. The study also revealed that the boys consider their teachers, the media, their friends and father as an import source of information on sexual and reproductive health issues. Teenage pregnancy is a concern among boys and this study recommends targeted sexual and reproductive health intervention for boys.



## **TREND ANALYSIS ON GENDER DISPARITIES IN NAMIBIA’S MINING SECTOR: EVIDENCE FROM THE AFFIRMATIVE ACTION REPORTS OF 2011-2015**

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Gender inequality is a global concern that involves the denial of opportunities and the denial of equal right based on ones’ gender. Many countries across the globe had made tangible strides to address the issue of gender inequalities by formulating policies to ensure that gender inequality as manifested in many forms is not left unchallenged. Namibia is of no exception to this global phenomenon. The country’s labour force is characterized by inequalities based on gender despite the various government interventions to address such disparities. These inequalities were inherited from the colonial era when only men from the indigenous were employed to work in the mines, the influence which is in persistence until today though the government had made meaningful progress in addressing gender disparities in different sectors of the economy by bringing women to par with men. The government through the Employment Equity Commission had enacted the Affirmative Action (employment) Act No 29 of 1998 to ensure that all Namibians enjoy equal employment opportunities and benefits. The country’s mining sector is dominated by prejudice, stereotypes and discriminatory practices based on gender orientation, thus women participation in this sector has been minimal over the past years to date. This paper examines the trends on Affirmative Action (employment) Act in the mining sector, which is one of the gendered sectors that have been traditionally deemed as a male realm. The paper made utilization of study data from Affirmative Action annual reports of 2011/2, 2012/3, 2013/4 and 2014/5 provided by the Employment Equity Commission and concluded that the hierarchies in terms of gender participation in the mining sector are still skewed in favour of males.

## **THROUGH ROLE PLAY TO SELF-AWARENESS: USING PROCESS DRAMA AS A COMMUNICATION TOOL AROUND ADOLESCENT PEER PRESSURE AND DRUG ABUSE**

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This research attempts to raise self-awareness and articulate issues pertaining to adolescent peer pressure and drug abuse through the lens of process drama in South African primary schools. The target group for this project was grade 7C learners of St Theresa’s Convent Primary School in Coronationville, Johannesburg. The theoretical framework of this study is underpinned by Drama in Education, Theatre for Development and Theatre of the Oppressed theories. The study used a participatory workshop case study approach within the qualitative action research paradigm. Data was gathered through focus group discussion and participant observation. Research instruments included interviews, questionnaires and an observation checklist, and data was also digitally recorded. The literature survey included books, journals, newspapers and organizational records on internet reports. Mantle of the expert and teacher-in-role were the overarching process drama techniques essential for participants to be able to negotiate, make decisions and solve challenges in drug abusing circumstances. This research showed how the safety of process drama through the creation of “dramatic elsewhere”, distancing, framing and role playing, works towards constructive social change. The research noted that, transformation is not an event, but a process which is dependent on encounters, relationships and learning. Findings call for efforts to address adolescent substance abuse, engaging the wider population, not just empowering the concerned adolescents. The research recommended that process drama be further emphasized, because of the dynamic and constantly changing nature of adolescents and the drugs that they use. Process drama drug prevention intervention programmes need time to allow for project impact assessment in form of follow-up workshops.

## **EMPOWERING WOMEN AND PROMOTING GENDER EQUALITY FOR SUSTAINABLE DEVELOPMENT IN NAMIBIA**

Christopher Mba Weregwe

This study aims to bring out the role of empowering women and achieving gender equality in the sustainable development of Namibia. To achieve this objective, the author employed qualitative methodology, with secondary sources as instruments of data. Findings will show that the Namibian woman has a very little role to play in so far as the sustainable development of the country is concern. This is so because the Namibian woman has traditionally suffered discrimination and exclusion from full participation in the political, socio-economic and cultural life of the nation. The root cause of gender inequality in Namibia identifies low status of women, negative cultural perceptions of gender roles, inequitable access to resources, the low participation of women at all levels of decision making and lack of women's socio-economic empowerment generally. The predicament of the Namibian woman is further worsened by the high rate of HIV/AIDS, gender-based violence, high levels of food insecurity and poverty dominant in women-headed homes. The author maintains that because the Namibian woman dominates the country's population there is urgent need to empower them so that they can play their role in economic, social, political, and environmental development of the country. Therefore, this paper challenges the government of Namibia to empower women and utilize all the potentials of the country to bring about sustainable development.

## **THEMATIC AREA: EDUCATION AND CULTURE**

### **STUDYING SEXUALITY: LGBTI EXPERIENCES IN INSTITUTIONS OF HIGHER EDUCATION IN SOUTHERN AFRICA**

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Although there are several studies internationally on gender and sexual orientation diversity, these are limited in the Southern African Development Communities' (SADC). This paper describes research conducted in Namibia and South Africa on sexual orientation and gender identity in the Higher Education (IHE) sector. The paper focuses on research on sexual health, teaching and training, advocacy and interventions. The study sites included rural and metropolitan-based institutions for environmental triangulation and diverse research designs were used for methodological triangulation. The research findings presented here indicate that institutions of higher education are still heteronormative and LGBTI staff and students are marginalized, prejudiced and discriminated against. On a positive light, there are activities in a few institutions harnessed to create conducive teaching and learning environments for and about sexual orientation and gender identity. This research contributes to efforts to destabilise hetero- and cis-normativity.

### **THE INTERSECTION OF ACADEMIC DISCIPLINES IN AN INTERNATIONAL PARTNERSHIP TO PROMOTE LEARNING THROUGH ICT AND MEDIA-MAKING**

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This paper responds to two of the subthemes in this year's Multi/Interdisciplinary Research Conference, including Education and Labour Force, and Strengthening Global Partnerships. A partnership involving long-term efforts of the Namibian Ministry of Education, Arts and Culture, the University of Namibia, the US State Department's Fulbright Research Program and the US National Science Foundation is in mid-course. Both operational and strategic research issues have come into play. Now in its third year, the partnership has expanded to include partners in three countries (the US, Finland and Kenya), in addition to school and university partners in eight regions in Namibia. The primary thrust of the partnership involves a research-based approach to the integration of ICT into schooling. The expression "integration of education into schooling" evokes many interpretations. Core activities involve teachers, learners, and teams of learners and teachers creating digital video content in science and mathematics, with entrée through workshops that take place in different school-related venues in the eight regions to date. Our approach is one that relies heavily on a blend of disciplines and theoretical perspectives. One of the most crucial, drawn from the learning sciences, involves the cognitively powerful mechanisms in play during self-explanation activities. Greater emphasis in current year activities focus is drawn from mathematics education research on modelling. Drawing learners and teacher into interactions with peers in the other countries entails disciplines of social media research, intercultural competence, and intergenerational collaboration. The project also relies increasingly on understanding the power of narrative and story-telling and help-giving. Finally, the project originated in a quest to identify and operationalize conditions of deep engagement in learning and in flow-states of immersion while developing digital content. This paper will reflect on important lessons and best practices, but primarily focus on the lively intersection of these disciplines as the partnership unfolds.

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