Garowe Teachers Education College

Building the nation through education

Research Journal

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Preface

GTEC Research Journal was created to act as a forum for multidisciplinary perspective involving discussions and reflections on education and life science in Puntland Government of Somalia. The journal appears once a semester. The editorial board invites contributions from scholars on education in eastern Africa and overseas, to give analytical studies and creativity in Puntland that is inclined to education, peace building, social development and environmental protection. The big picture of GTEC Research Journal is to make Puntland a better country in Africa to live in. The journal will always provide book re-views paying attention to those areas that affect Puntland as a country.

About GTEC Research Unit

Garowe Teacher Education College GTEC is an institute that is situated at the centre of Puntland state of Somalia, with students from districts around most areas of the state and staff members from around East African region. The team of staff members and students of this caliber is of paramount importance in research that looks into the issues of education, peace building, social development and environmental protection in Puntland Government of Somalia. The proposed research unit will bridge this gap. The objective of the research unit is to enable staff and students to use and conduct research at the college involving data sets from all over Puntland state of Somalia. The d research unit will conduct an annual conference and publish two journals. One of the journals will publish only abstracts of the papers presented at the annual conference whereas another will publish full papers. The annual conference is expected to attract both local and international researchers to participate.

As the world has become a global village, and that for development to be realized in any community, the country must cope up with research to keep up to date with the developmental changes, it is high time Garowe Teacher Education College operationalized a research unit that enables staff and students community to study the crucial areas that do cause development in Puntland state of Somalia.

Garowe Teacher Education College research unit is expected to carry out a duty of conducting research under the following thematic areas: education, peace building, social development and environmental protection This will always be done by mobilizing a team of enthusiastic staff members and students to keep an eye on the key areas every year and evaluating the impact of the information provided to the research users around Puntland state.

The research unit will operate at the college premises and will be managed by the staff at the college.

The Garowe Teacher Education College vision says “To be a centre of excellence and the leading institution in teacher education training and research”, since then the college has established a research unit that can be used by both staff members and students to address the issue of research.

The research unit issue is the establishment of the research segment at Garowe Teacher Education College that enables staff and the students to use and conduct research in the areas of education, peace building, social development and environmental protection. The research unit will also monitor development following the research results and their application in the region. The objective of the research unit is to enable staff and students to use research and do research in the region in areas of education, peace building, social development and environmental protection.

Background and Significance

GTEC is a national teacher training college in Puntland state of Somalia. The college also aims at conducting research in Puntland as indicated in the vision.

GTEC community is comprised of students from all around Puntland and staff from various parts of east African region with various experiences that are important in research.

The research unit will comprise a team that ensures that findings are properly documented and made available for users of research around the world.

The team will always organize an annual conference under education, peace building, social development and environmental protection.

The unit will promote gender neutral practices in the conduction of research to enable girls and boys, men and women to have equal participation in the research findings.

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Research journal in which the article was originally published must be obtained and the 3
fact that the article has already been published must be made clear on submission and stated in the abstract.

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Table 1: General permissible and non-permissible forms of duplicate/ overlapping publication

Type of duplicate/overlapping publication	Guidance on permissibility
Article previously published in another language.	Yes, if consent from original publisher sought and prior publication mentioned clearly in the manuscript.
Pre-print servers including authors' personal and institutional websites.	Yes
Abstracts/posters presented at scientific meetings.	Yes - published abstracts should be cited.
Health Technology Assessment.	At the Editor(s)' discretion - contact journal's editorial office for more information
Cochrane systematic reviews.	No, unless original or substantially updated.
Open science - data posted on wikis, blogs, electronic online notebooks, networking websites.	Yes
Open science - data posted and discussion on wikis, blogs, electronic online notebooks, networking websites incorporated into submitted manuscript.	At the Editor(s)' discretion - contact the journal's editorial office for more information.
Figures and tables in non-research articles.	Yes, if, where applicable permission has been obtained from the original publisher, by the submitting author.
Abridged articles	At the Editor(s)' discretion provided there is agreement with the original journal/publisher, and the original publication is cited.
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Study protocol published	Yes - published protocols should be cited
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Co-publication in multiple journals	At the Editor(s)' discretion and with conditions, as per GTEC research center guidelines

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ARTICLE 1: ANALYSIS OF THE EFFECT OF NEEM TREE (AZADIRACHTA INDICA) EXTRACTS AND CAMEL URINE ON THE CONTROL OF TICKS ON CAMELS AND GOATS

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Abstract

The Neem tree has long been recognized for its unique properties both as natural insecticides and medicines, thus, helps in controlling insect and other arthropods, improving human health as well as soil fertility. Azadirachtin, is a complex tetranortri-terpenoid, limonoid from the neem seeds and is the main component responsible for the toxic effects on insects. The current study was invitro horizontal experimental study and was conducted during the month of October to December in GTEC laboratory. Prior to the study the different species of ticks were collected and identified as; Amblyoma vareigatum, Rhipicephalus appendiculatus, and Hadingi leachi at Makerere University Kampala in Uganda during the month of March, 2015. Ripened seeds were extracted from mature fruits and varying concentrations of 0.1, 0.2, 0.3 0.4 & 0.5 M were both seed and leaf extracts were prepared by measuring 10, 20, 30, 40 & 50 grams respectively. Both leaf and seed were in crashed in the mortar using pistol until a pastes and powered was formed respectively and 200mls of water at room temperature was added to leaf paste while water at 100 ^{0}C was added seeds powered and left to cool to room temperature. There were then filtered and filtrate used as the extracted and residues discarded for either of the extracts. The urine from came exempted from drinking for a week was collected a day prior to experimental setup and different volumes of 10, 20, 30 40 and 50 ml were measured and applied without dilution. The ticks were collected from goats, camel and sheep and were subjected to the application of extracts within a time framework of 30 minutes. A total of six different experimental setup were designed and included, Neem leaf , seed extracts, camel urine, leaf extract plus camel urine, seed extract plus camel urine and combination of leaf, seed and camel urine at varying concentration were conducted. The results indicated that; all extracts from seed,

leaf and camel urine at different concentration had lethal effects on to ticks. The extract from seed proved more effective time with those of leaf either used alone or in combination with camel urine and combination of all the three different extract caused the greatest lethal effects. It was recommended that more studies be conducted to assess the effect different species, different component isolated using HPTLC chromatography method to assess the most active ingredient, Urine obtained from camel exempted from drinking water for two weeks, and different of Azadirachta indica parts like the back, flower and fruit and different species like Azadirachta juss rather than Azadirachta indica be was used in this experiment to assess their lethal effect on ticks.

1.0 Introduction

Neem tree is scientifically referred to as *Azadirachta indica* which trace its origin from India and it is now widely distributed throughout the world especially in the tropical countries(E. J. Allan, Stuckbury, & Mordue, 1999). Neem tree like mahogany belong to family Meliaceae which was formerly known as Morgasa (E. J. P. Allan et al., 1994; Linton, Nisbet, & Mordue (Luntz), 1997). Members of this family contains active ingredient which have reported to mitigate/prevent insects and other related arthropods as well as improves on human health most especially in pertaining to immune boosting(Cottee & Mordue (Luntz) 1982).This means that neem tree has the ability to mitigate pathogens and well as vectors(Lowery & Smirle, 2000) thus it is a very vital aspect in veterinary and medical sciences (pharmacology) Neem tree has been found to contain an active ingredient known as azadirachtin and its homologues which are mainly found in seeds and leaves but small quantities have also been reported in flowers, fruits back and root(Blaney, Sommonds, Ley, &, & Toogood, 1990). Thus, neem tree alkaloids are distributed throughout different parts of the plant(Gajakshimi & Abbasi, 2004). Though, the distribution of these alkaloids is throughout the various plant part high concentrations have been reported in the leaves backs, and well as seeds(Gajakshimi & Abbasi, 2004). Azadirachtin is a complex tetranortri-terpenoid limonoid from the neem seeds and is the main component responsible for both antifeedant and toxic effects in insects. Others are limonoid nimbin, azadirachtin, n- hexane (from specifically seed) limonoid, salannnin, nimbolide, gedunin, 3- tigloylazdirrachchtol, mahmoodn, gallic acid, epicatechin, margolone, margolonone, isomargolonone, cyclic trisulphide, cyclic tetrasulphide, and many other sulphur-containing compounds with repellent, antiseptic, contraceptive, antipyretic and antiparasitic properties are found elsewhere in the tree, e.g. leaves, flowers, bark, roots(Isman, 1997; Kraus et al., 1987). Infact neem tree has been reported to

contain more than forty alkaloid on addition to other free mineral ion in their solution(Agrawal, Kaul, Paradkor, & Mahadite, 2005). Therefore, neem tree seems to have all these qualities of substances (chemicals) can be extracted and used in the control of parasite as well as vectors most especially in the domestic animals and the best alternative to artificial pesticides(Linton et al., 1997). Neem tree extracts have been reported to have effects on various activities of the body as well as microbe and arthropods. For example neem tree extracted have been reported to effects on immune-stimulant, hypoglycaemic, antiulcer, anti-fertility, anti-malarial, antifungal, antibacterial, antiviral, anti-carcinogenic hepatoprotective and antioxidant activities. Thus, neem tree extract have been found to treat several disease including but not limited to leprosy Eye problem, epistaxis, intestinal, worm, anorexia, skin ulcers, bile suppression, relieves piles, urinary disorders, diabetes, wounds ringworms scabies, blood morbidity, affliction, itching, burning sensation(E. J. Allan et al., 1999; Amrose, 2005). Therefore, importance of neem tree extracts to man as well as domesticated animal cannot be under-estimated including in plant production cannot be estimate as their extract have implications veterinary, medical and agricultural implication.

Studies on the toxicological effects of Neem tree can be traced back from 1952 basing the worked conducted by Heinrich Schmutterer (Dorn, 1986; Ley, Denhom., & Wood, 1993). He ascertained that desert locusts, *Schistocerca gregaria* refused to feed on leaves of neem and yet had been known to be the most hazardous herbivorous among the arthropods. This gave an insight that neem tree could contain substance that could repellent or mitigate or even kill locusts and other members the same family as well as the phylum(Blaney et al., 1990). However, these study did clearly elaborate whether neem tree could be used to control parasitic arthropods which are health hazard to man and his animal which necessities to extent this knowledge for further study(Linton et al., 1997). Closer studies revealed that different species has an unusual high sensitivity to azadirachtin as an antifeedant, perhaps related to the supposed co-evolutionary origins of both tree and locust in Burma(Mordue (Luntz), Cottee, & Evans, 1985). There have been at least six international conferences on neem to date, the first taking place in Germany in 1980, and there is a vast scientific literature which reveals both the antifeedant effects of neem and the more important physiological effects (as far as crop protection is concerned(Martinez & Vvan Emden, 1999)).This is an indication that the effect of neem tree extract varies from one class to another and even within the species themselves.

Camel urine have been reported to have affect on various classes including arachnids, insects, chilopoda, diplopods and crustacean(Kenya, 1996). Studies reported by Kenya agriculturalist have shown that application of camel urine which has been exempted from drinking water for about two weeks was more effective in repealing and mitigating ticks on the animals(B.W Jacob, 1996). This was attributed to high concentration of urea under such conditions which posses toxic effect on ticks and result into them falling off from the animal(Kenya, 1996). This mean the camel urine has also qualities of repelling ticks from domesticated animals and implication developing an environmentally an insecticide further researcher can be carried out to or one of the component. Thus, a combination of camel urine and neem tree extract would yield far better result than when either of the two is used alone.

One of the biggest challenges animal husbandry in the developing world today is increasing infection by various diseases(Mordue (Luntz), Davidson, McKinla, & Hughes, 1995).Over 80 % of these infections are spread by arthropods of which ticks are among the most notorious ones most especially to domesticated animals including but not limited to goat, sheep, camels and cattle(Kenya, 1996). Ticks have been known to spread many disease in various mammals such cattle, goats, sheep, and camel among others.(Kenya, 1996) Somalia is one of the countries in Africa where the most of the population depends on agriculture mainly keeping animals of which camel, goats and sheep are the most pronounced. However, expansion of these activities so as to boost the livelihood of the citizens has been partly hampered due to arthropods borne disease of which ticks sound to be more pronounced(Mordue (Luntz), Evans, & Charlet, 1986).Different species of ticks have been found in various parts of Africa. These includes; *Amblyoma vareigatum*, *Rhipicephalus appendiculatus*, and *Hadingi leachi* among others (Makerere University Department of Biological sciences, College of natural Sciences, 2013).

The available methods which are used to control ticks by most farmer on their domestic animal are mainly use of artificial drugs or chemical applications which requires more skills and precaution should be on taken before use(B.W Jacob, 1996). Not only limited to this, most of these artificial/pesticides or chemicals are expensive and cannot be affordable by most farmers and have been associated with human related health hazards and worst of it causes serious environmental threats to the community. Therefore, there is need to use a method which more healthier and environmentally sound and readily available of

which neem tree extract and camel urine seem to have these qualities in this area. The current therefore assessed the effect of neem tree extracts and camel urine in controlling various species of ticks. The study specifically focussed on; the effect of different concentrations of leaf, seed extracts and camel urine on the different species of tick. This study in turn not only boosts animal and human lives but would well reduce the economic burden of treating animals as well as human zoonotic and create a healthy environments. All these have a positive implications on boosting productivity of animal and animal products as well as economic status of the animal agriculturalist which is seemingly one of the major economic activities of residents in Somali as whole and Puntland in particular.

1.1 Methods and Material

The study was conducted in Garowe Teachers' Education Centre (GTEC) biochemistry laboratory in the Garowe city in Nugal region of Puntland State of Somalia, located in the North Eastern of Somalia. The ticks which were collected from the different animals (camel, goat and sheep) animal and were preserved for one week to deter them from decaying and then be carried to Makerere University Kampala in Uganda for identification of different species. Three different species were identified ticks species common in Somalia were; *Amblyoma vareigatum*, *Rhipicephalus appendiculatus,* and *Hadingi leachi.* This study was a purely a horizontal invitro experiment design as the application of the extracts was done shortly after removing from the animals within a time framework of 30 minutes. Then ripe 500 gms from neem extracts tree were collected and dried prior to the experimental setup. Freshly Leaves were collected the tree shortly from nearby neem tree shortly prior time of application on that particular very day. Varying concentrations of 0.1, 0.2, 0.3, 0.4 & 0.5 M the concentrations in were prepared by weighing 5, 10, 15, 20 and 25gms respectively to represent the above the concentrations for each seed and leaves. Leave were crashed until some juice was produced from then and 200 ml of cold water was measured and mixed to make a paste and it was then filtered and filtrated was used while the residue was discard. The extracts from seed were obtained by first water was boiling to 100 ^{o} C and corresponding masses as those weighed for the leave were weighed and each dissolved in 200 ml of hot water and left to stand until it completely cooled. Camel Urine from a camel which had been exempted from drinking water for a week was collected a day prior to the laboratory the experimental design. Varying volume of camel urine were measured of 10, 20, 30 40 and 50 mls and in this case no dilution was made. These were treated as 0.1, 0.2, 0.3, 0.4 & 0.5 M respectively. A control experiment was all case of application and in this case it only contained pure or distilled water

without any other ingredient was used (Mordue (Luntz), Zounos, Wickramananda, & . 1995). In achieving the objective of this study different experimental activities were then conducted on application of the extracts. This included, the application of camel urine, leaf and seed extracts alone of varying concentrations. The subsequent experimental activities included; application a combination of leaf extracts plus camel urine, seed extract plus camel urine and finally a combination camel urine, leaf& seed extracts. The combination for either seed or leaf extract was done at corresponding varying concentrations with camel urine. The effectiveness of each concentration was tick were measured by counting the number of dead tick at every concentration at the time interval of twenty (20) minutes starting after 20, 40, 60, 80 and 100 minutes for all experimental setup conducted. All experimental setup were replicated three times and average number was obtained. Due to inadequacy of sophisticated machines HPTLC chromatography method, it will not be possible to separate each different active ingredient (Agrawal et al., 2005)and so who whole solution containing all the ingredients without isolation into different component were applied. The whole experimental setup took a period three months right time of project planning to implementation and writing up this article. The data collected was analysed by use of Statistical Packages for Social Scientist (SPSS)(Kakinda, 2000). One sample T- test was used to test significant level at varying concentration and locate the significant level paired sample t-test was carried for each concentration with respect to the control. The result of the study were summarised in mean difference and significant levels. For either experimental setup the result were presented in both table and figure form for easy interpretation and comparing the significant levels of varying concentrations with respect to the control.

1.2 Results and Discussions

Effect of Extracts from Neem Leaf Extracts Death Rate of Ticks.

Table 2 Effect of Extracts from Neem Leaf Extracts Death Rate of Ticks

	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Effect of Concentration 10 g on Ticks with Time (Minutes)	2.708	5	.042	2.83333	.1441	5.5226
Effect of Concentration 20 g on Ticks with Time (Minutes)	3.202	5	.024	3.66667	.7233	6.6101
Effect of Concentration 30 g on Ticks with Time (Minutes)	3.576	5	.016	4.50000	1.2654	7.7346
Effect of Concentration 40 g on Ticks with Time (Minutes)	3.451	5	.018	4.83333	1.2335	8.4332
Effect of Concentration 50 g on Ticks with Time (Minutes)	3.820	5	.012	6.00000	1.9627	10.0373

Source: Experimental data

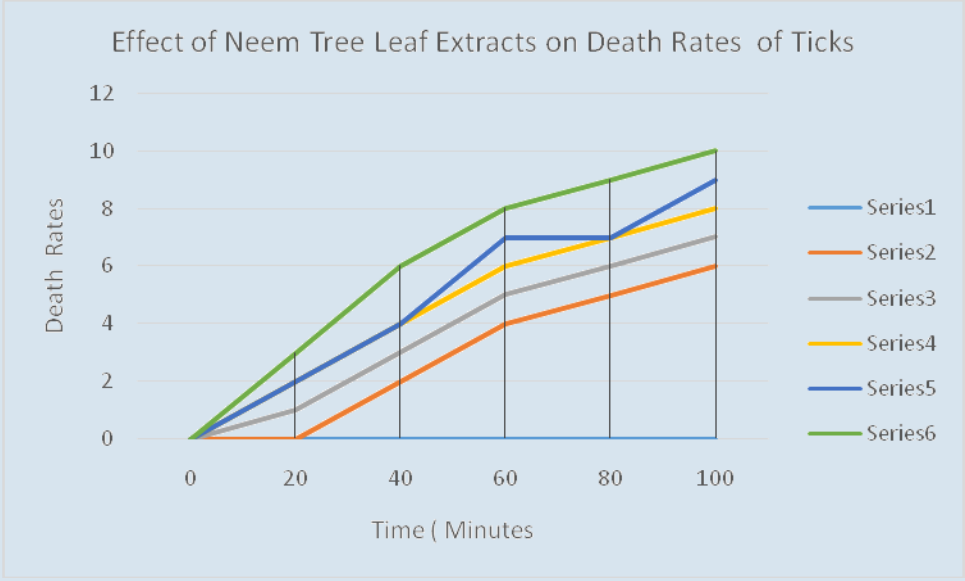

Figure 2: Effect of Neem Tree Leaf Extracts on Death Rates of Ticks

The result in the figure1 and table 1 indicates the death rate of ticks increased with time on application of the leaf extracts. Higher concentration however, caused more death rates. An indication that higher concentrations are more effective in control tick population. All the varying concentrations 0.1, 0.2, 30, 0.4 and 0.5 M, were significant in killing of ticks as it indicated (p= 0.42, 0.024, 0.016, 0.0012) respectively with respect to the control. Even then the concentration the significant level was highest at the highest concentration of 0.5M A paired t-test for the effect of varying concentration with respect indicated there was a very significant (p= .001) an indication on the effectiveness of causing death rate to the tick population. This alone show that at whatever concentrations tick population are affect but higher concentration proved more effective with time (Figure 1). Neem leaf tree extracts contain an active ingredient known such as azadirachtin and other many alkaloids like which has toxic effect on variety of tick species. The toxicological effect increases with increasing in concentrations. Neem tree extracts have other ingredients like limonoid nimbin, limonoid, salannnin, nimbolide, gedunin, 3- tigloylazdirrachchtol, manhood, gallic acid, epicatechin, margolone, margolonone, isomargolonone, cyclic trisulphide, cyclic tetrasulphideother than azadirachtin of which at higher concentration which toxic as well as repellents to tick and related arthropods. (Blaney et al., 1990) found out the neem tree had toxicological effects on tick, mosquitoes and therefore was recommended to be incorporated into insecticide for better results.

Effect of Neem Tree Seed Extracts on Death rates of Ticks

Table 3 Effect of Neem Tree Seed Extracts on Death rates of Ticks

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Effect of Concentration 10 g on Ticks with Time (Minutes)	2.767	5	.040	2.33333	.1656	4.5010
Effect of Concentration 20 g on Ticks with Time (Minutes)	3.348	5	.020	3.16667	.7355	5.5978
Effect of Concentration 30 g on Ticks with Time (Minutes)	3.757	5	.013	4.00000	1.2634	6.7366
Effect of Concentration 40 g on Ticks with Time (Minutes)	3.576	5	.016	4.50000	1.2654	7.7346
Effect of Concentration 50 g On Ticks with Time (Minutes)	3.858	5	.012	5.33333	1.7797	8.8870

Source: Experimental Data

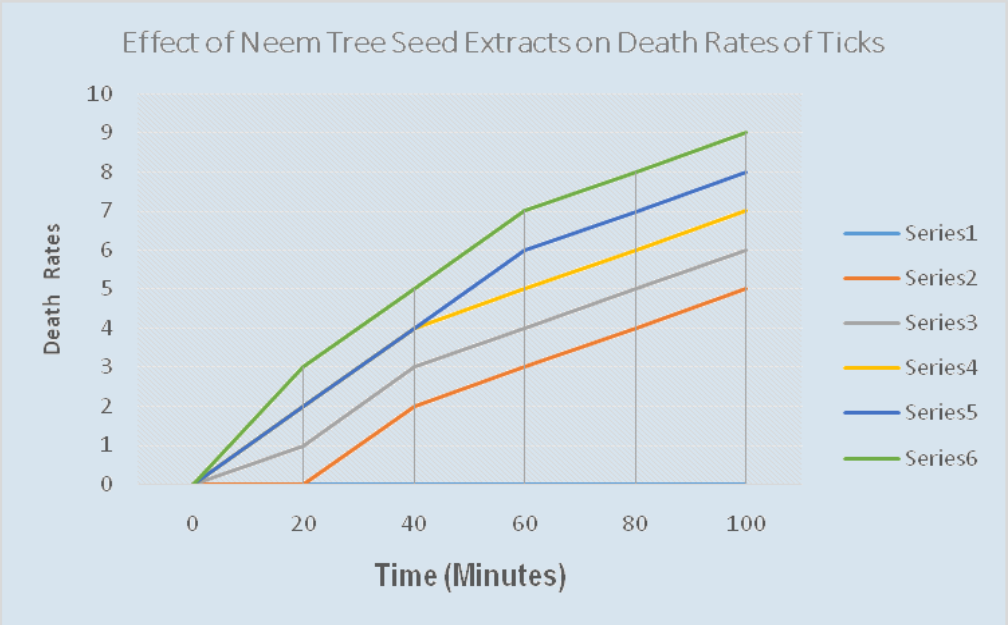

Figure2 Effect of Neem Tree Seed Extracts on Death rates of Ticks

Like the leaf extract, the neem seed extracts also caused significant death rate on ticks (p = 0.040, 0.020, 0.013, 0.016 and 0.012) at concentration of 0.1, 0.2, 0.3, 0.4 and 0.5 M respectively. Higher concentrations like in the leaf extracts have the caused significant effect on death rates. A comparison between varying concentrations of 0.1, 0.2, 0.3, 0.4 and 0.5 M with respect to the control also indicates that there are all significant with (p= 0.040, 0.020, 0.013, 0.12) respectively. This mean the effective of controlling ticks using neem seed increases with concentration and varying time. The extracts from seed had similar toxicological effect on tick and all concentration from significant than corresponding leaf extracts. This is because the distributions of seed contain almost all active ingredients like leaves for azadirachtin on addition to salannin and n-hexane which are so poisonous to ticks and could cause the death of ticks with time. The studies revealed by(Mordue (Luntz) et al., 1985; Mordue (Luntz), Zounos, et al., 1995)reported that neem seed extracts could be used in killing ticks and grasshopper. However, they found that more tick could be cleared than in this current study. This difference can be attributed in the methodology used in investigation and time of exposure. For example where whereas in the current experiment whole extracts were used without isolation of different components extracts and exposure time shorter the previous studies isolated the different active ingredient using of HPTLC chromatography methods and gave exposure them to more and species they used.

Effect of Varying Concentrations of Camel Urine on Death Rate of Tick

Table 3Effect of Varying Concentrations Camel Urine on Death Rate of Tick

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Effect of Concentration 10 cm3 On Ticks with Time (Minutes)	2.982	5	.031	4.33333	.5984	8.0683
Effect of Concentration 20 cm3 on Ticks with Time (Minutes)	3.280	5	.022	5.33333	1.1531	9.5135
Effect of Concentration 30 cm3 On Ticks with Time (Minutes)	3.760	5	.013	7.00000	2.2138	11.7862
Effect of Concentration 40 cm3 on Ticks with Time (Minutes)	3.936	5	.011	7.83333	2.7172	12.9494
Effect of Concentration 50 cm3 on Ticks with Time (Minutes)	4.166	5	.009	9.00000	3.4469	14.5531

Source: Experimental Data

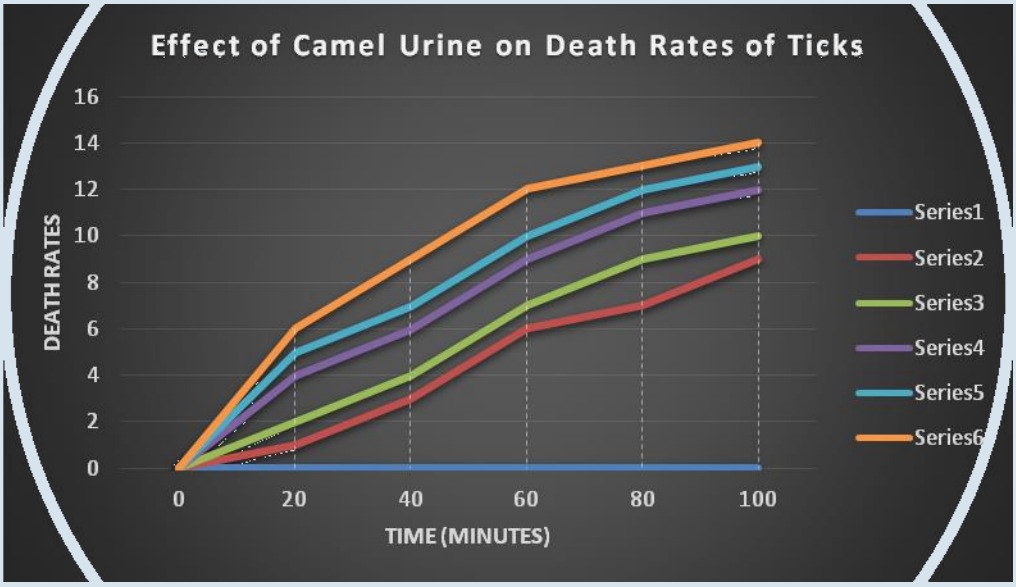

Figure 3 Effect of Varying Concentrations of Camel Urine on Death Rate of Tick

Application of camel urine alone was more effect than either neem leaf or seed extracts. This can be seen in figure 3 and table 3 above and very high significant level of for independent one sample t- test (p= 0.31, 0.022, 0.013, 0.011 and 0.0009 at corresponding concentration of 0.1, 0.2, 0.3, 0.4 and 0.5 M respectively. This is an indication of increasing effect on tick control. A paired t- test for varying concentration indicated p = 0.031, 0.22, 0.13, 0.011 and 0.009. This implies irrespective of concentration there was an effect on tick though higher concentration proved more effective. This is because camel urine contains high of urea concentration of other dissolved ion which has of which of concentration sufficient enough to be lethal to ticks then ingredients in neem leaf and seed extracts with increasing concentrations and more time of exposure. Observation made by (Kenya, 1996) whereby camel urine was found to cause fall out of tick from cattle after twenty hour. This mean that the effects of camel urine are realized with time and no immediate effect bur no immediate observation made. Thus, appears the lethal effect of camel urine on tick depends on the magnitude of duration of exposure and urea concentration.

Effect of Varying Concentration of Neem Leaf Camel Urine on Death rate of Ticks

Table 4Effect of Varying Concentration of Neem Leaf Camel Urine on Death rate of Ticks

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Effect of Concentration 10 cm3 + 10g On Ticks with Time (Minutes)	2.907	5	.034	5.83333	.6743	10.9923
Effect of Concentration 20 cm3 + 20g On Ticks with Time (Minutes)	3.202	5	.024	7.33333	1.4465	13.2202
Effect of Concentration 30 cm3 + 30g On Ticks with Time (Minutes)	3.576	5	.016	9.00000	2.5308	15.4692
Effect of Concentration 40 cm3 + 40g On Ticks with Time (Minutes)	3.451	5	.018	9.66667	2.4670	16.8663
Effect of Concentration 50 cm3 + 50g On Ticks with Time (Minutes)	3.894	5	.011	12.16667	4.1355	20.1979

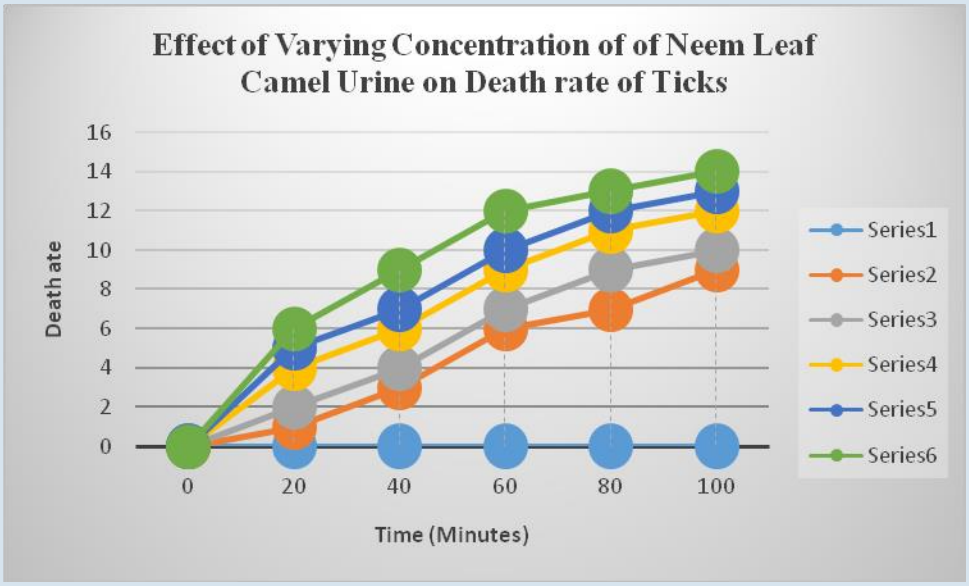

Figure 4 Effect of Varying Concentration of Neem Leaf Camel Urine on Death rate of Ticks

Also the findings indicates that the application of a combination of both camel urine and neem tree extract caused a more significant effect on death rate (p= 0.034, 0.024, 0.016, 0.018 1nd 0.011) for corresponding concentration of 0.1, 0.2, 0.3, 0.4 and 0.5 M respectively. This shows that the mixture of two serves a better purpose in control tick on domestic anima than either case alone. . All the concentration were significant with paired sample t- test with respect to the control (p=0.034, 0.24, 0.016, 0.018, 0.011). This because neem leaf tree extract contains nimbin, limonoid, salannnin, nimbolide, gedunin, 3- tigloylazdirrachchtol, mahmoodn, gallic acid, epicatechin, margolone, margolonone, isomargolonone, cyclic trisulphide, cyclic tetrasulphideother than azadirachtin, triterpenoids and azadirachtin together with high urea from camel urine cause a higher impacts. In agreement with the studies conducted by (E. J. P. Allan et al., 1994)found out that arthropods generally are more susceptible to chemicals like azaradictina, limonoid and triterpenoids which are found in neem leave extracts. (B.W Jacob, 1996; B.W Jacob, 1997)found out plant extracted damaji (*Commiphora incisa*) contains active and poisonous alkaloids which when missed with camel urine of high urea and mineral concentration and caused death of the ticks at a faster rate.

Effects of Camel Urine and Neem Tree Seed Extracts on Death Rates of Ticks

Table 5 Effects of Camel Urine and Neem Tree Seed Extracts on Death Rates of Ticks

	Test Value = 0					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Effect of Concentration 10cm3 + 10 g On Ticks with Time (Minutes)	2.961	5	.031	5.33333	.7031	9.9636
Effect of Concentration 20cm3+ 20 g On Ticks with Time (Minutes)	3.178	5	.025	6.50000	1.2423	11.7577
Effect of Concentration 30 cm3 + 30 g On Ticks with Time (Minutes)	3.402	5	.019	8.16667	1.9967	14.3367
Effect of Concentration 40 cm3 + 40 g On Ticks with Time (Minutes)	3.517	5	.017	9.33333	2.5107	16.1560
Effect of Concentration 50 cm3+ 50 g On Ticks with Time (Minutes)	3.862	5	.012	11.16667	3.7337	18.5997

Source: Experimental Data

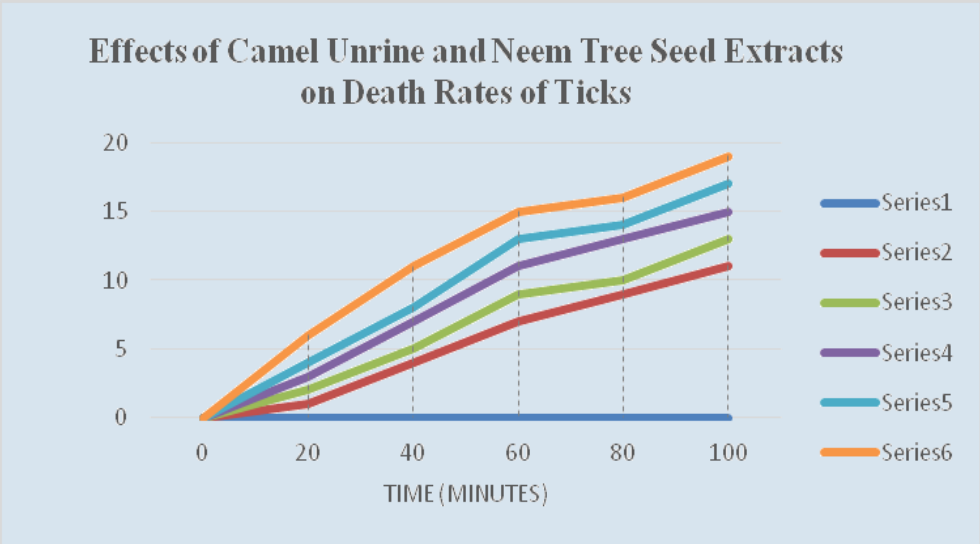

Figure 5 Effects of Camel Urine and Neem Tree Seed Extracts on Death Rates of Ticks

Like the finding of table 4 and figure 4 shows application of a mixture of neem seed and camel urine (p = 0.031, 0.025, 0.019, 0.017 and 0.012) for the corresponding concentration of 0.1, 0.2, 0.3, 0.4, & 0.5 M. However, at this same concentration was slightly more significant than those of camel urine and leaf extract mixed. P= 0.031, 0.25, 0.19, 0.17, 0.12). This because neem This is because the distribution of seed contain almost all active ingredients like leaves for azadirachtin on addition to salannin and n-hexane at higher concentration on addition to higher urea therefore cause more lethal effect on ticks than the combination with camel urine and leaf extracts. In agreement with the studies conducted by(E. J. Allan et al., 1999) found out that arthropods generally are more susceptible to chemical like azaradictina, limonoid and triterpenoids which are found in neem leave extracts and seeds. The lethal effect is however realised by seed extract due to higher concentration of active ingredients than in the leaves.

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Effect of Concentration 10cm3 + 10 g + 10g On Ticks with Time (Minutes)	3.962	5	.011	7.50000	2.6340	12.3660
Effect of Concentration 10cm3 + 20 g + 20 g On Ticks with Time (Minutes)	4.123	5	.009	8.50000	3.2006	13.7994
Effect of Concentration 10cm3 + 30 g + 30 g On Ticks with Time (Minutes)	4.135	5	.009	10.33333	3.9097	16.7569
Effect of Concentration 10cm3 + 40 g + 40 g On Ticks with Time (Minutes)	4.142	5	.009	12.16667	4.6161	19.7173
Effect of Concentration 10cm3 + 50 g + 50 g On Ticks with Time (Minutes)	4.332	5	.007	14.16667	5.7603	22.5731

Source: Primary Data

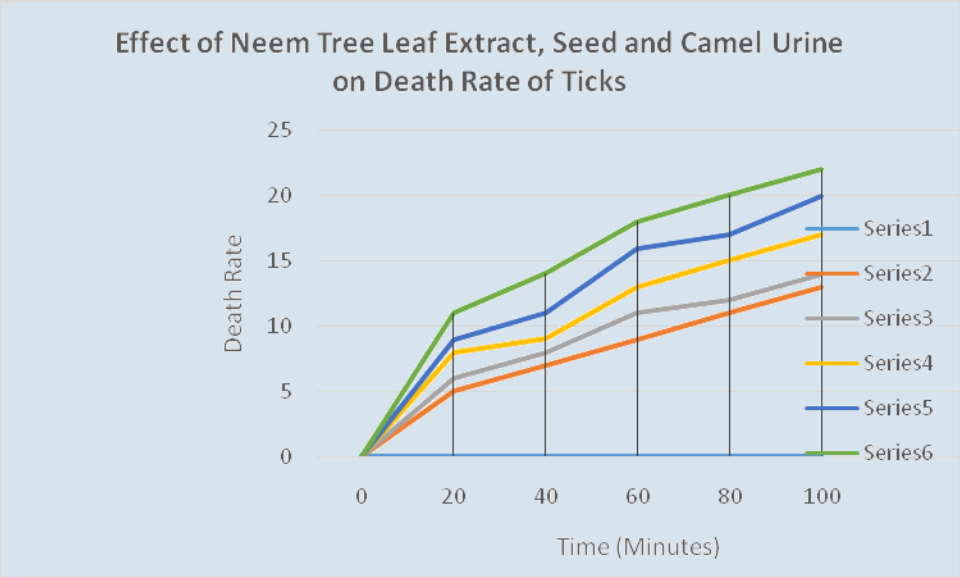

Figure 1Effect of Neem Tree Leaf Extract, Seed and Camel Urine on Death Rate of Ticks

The results in the table and figure 6 show that application combination of neem tree, seed, leaf and camel extract yield the best effect as can be depicted from very high significant level (p= 0.011, 0.009, 0.009, 0.009 and 0.007) for concentrations of 0.1, 0.2, 0.3, 0.4 and 0.5 M. This show that use of the combination of all the three could be better in controlling the ticks. (p= 0.11, 0.009, 0.009, 0.009 and 0.007). This is because the distribution of seed contains almost all active ingredients like leaves for azadirachtin on addition to salannin and n-hexane which are so poisonous to ticks and could cause the death of ticks with time at highest concentration compared to any of the two combinations and thus highest lethal effect on ticks was realized. In agreement with the studies conducted by (E. J. P. Allan et al., 1994) found out that arthropods generally are more susceptible to chemical like azaradictina, limonoid and triterpenoids which are found in neem leave extracts. This susceptibility increases with increasing concentration of the alkaloids.

1.3 Conclusions

The following conclusions are worthy to be made on basis of the findings from this study

- All the concentration prepared in this experimental study were lethal to tick for Neem tree leaf, seed and camel extracts.
- The lethal effects on ticks increased with increasing concentration irrespective of the nature of extracts.
- Both leaf and seed extract caused almost similar lethal effect though seed extract was slightly higher.
- The combinations of camel urine and leaf or seed extracts caused more lethal effect on ticks than any of the extract alone.
- Combinations of seed extracts and camel urine caused more lethal effects than camel urine and leaf extracts.
- The highest lethal effect was realised with combination of all the three that is camel, leaf and seed extracts.

1.4 Recommendations

The following recommendation can be made:-

- More specific study is needed in assessing the effect of camel, neem leaf and seed extracts on different species.
- More advanced method of be used, HPTLC chromatography method to isolate the different active ingredients so as to assess the most active one.
- Camel urine obtained from a camel which has exempted from drinking water for two to examine the effect of urea concentration under such circumstances on lethal effects of ticks.
- Another species of neem tree extracts like *Azadirachta juss* be used instead of *Azadirachta indica* which was used in this experiment.
- Extract from other parts of *Azadirachta indica* like back flower, back and fruit may also be used since there are also know to contain some active ingredients

References

Agrawal, H., Kaul, N., Paradkor, A. r., & Mahadite, A. (2005). Standandisation of Crude Extracts of Neem kernels (Azadirachta indica and A. juss) and Commercial Based Formulations using HPTLC and extendel Length Packed- Column SFC method Chromatographia *62*(180-195).

Allan, E. J., Stuckbury, T., & Mordue, A. J. (1999). Azadirachta indica A. Juss. (Neem tree): In vitro culture, Micropropagation, and the Production of Azadirachtin and Other Secondary Metabolites. *Biotec. Agric, 43*, 11-41.

Allan, E. J. P., Eeswara, S., Johnson, A. J., Mordue (Luntz), E. D., Morgan, T., & Stuchbury, H. (1994). The Production of Azadirachtin in-vitro Tissue Culture of Neem, Azadirachta indica. *Pestic. Sci, 42* 147-152.

Amrose, T. (2005). Larvacidal Efficancy of Neem (Azadirachta indica) Oil and Deffted cake on Culex quinquefascitus Say. *Geobios, 22*(169-173).

Blaney, W. M., Sommonds, W. V., Ley, J. C., &, A., & Toogood, P. L. (1990). Antifeedant effects of azadirachtin and structurally related compounds on lepidopterous larvae. *Entomol, 55*, 149-160.

Cottee, P. K., & Mordue (Luntz) , A. J. (1982). *An Investigation into the Physiological Actions of Feeding Deterrents* . Paper presented at the Proc. 5th Int. Symp. Insect-Plant Relationships, Wageningen.

Dorn, A. (1986). Effects of Azadirachtin on Reproduction and Egg development of the Heteropteran Oncopeltus fasciatus Dallas. *J. Appl. Entomol, 102* 313-319.

Gajakshimi, S., & Abbasi, S. A. (2004). Neem tree Leaves as a Source of Ferlilizer-Cum-Pesticide *Vermicompost Bioscience Technology, 92*, 291-296.

Hadden, R., & Robert, L. (2007). The Geology of Somalia: A Selected Bibliography of Somalian Geology, Geography and Earth Science. Engineer Research and Development Laboratories. *Topographic Engineering Center*.

Isman, M. B. (1997). Neem Insecticides. *Pest. Outlook*, 32-38.

Jacob, B. W. (1996). *Confidently Used Ethnoveterinary Knowledge Among Pastoralists of Samburu, Kenya Book 1 Methodology and Results by Practical Action East Africa*.

Jacob, B. W. (1997). *Ethnoveterinary Knowledge Among Pastoralists of Samburu, Kenya*

Kakinda, F. M. (2000). Introduction to Social Research. In MUK (Ed.). Kampala.

Kenya, E. M. i. (1996). A Field Manual of Traditional Animal Health Care Practices by Practical Action East Africa & IIRR, Practical Action East Africa 1.

Kraus, W. M., Bokel, A. B., R, Cramer, I. K., A, Klenck, G., Nagl, H., Pöhnl, H., . . . Vogler, N. (1987). Structure determination by NMR of azadirachtin and related compounds from Azadirachta indica (Meliaceae). *Tetrahedron, 43*, 2817-2830.

Ley, S. V., Denhom., A. A., & Wood, A. (1993). The Chemistry of Azadirachtin *Nat. Prod. Rep.:*, 109-101.

Linton, Y. M., Nisbet, A. J., & Mordue (Luntz), A. J. (1997). The effects of Azadirachtin on the Tests of the Desert Locust, Schistocerca gragaria. *J. Ins. Physiol 43*, 1077-1084.

Lowery, D. T., & Smirle, M. J. (2000). Toxicity of Insecticides to Obliquebanded Leafroller, Choristoneura rosaceana, Larvae and Adults Exposed previously to Neem Seed oil. *Entomol. Exp. Appl, 95*(201-207).

Martinez, S. S., & Vvan Emden, H. F. (1999). Sublethal Concentrations of Azadirachtin Affect Food Intake, Conversion Efficiency and Feeding Behaviour of Spodoptera littoralis (Lepidoptera) *Noctuidae). Bull. Entomol. Res, 89*, 65-71.

Mordue (Luntz), A. J., Cottee, P. K., & Evans, K. A. (1985). Azadirachtin: Its Effect on gut Motility, Growth and Moulting in Locusta. *Physiol. Entomol, 10*, 431-437.

Mordue (Luntz), A. J., Davidson, G, McKinla, R. G., & Hughes, J. (1995). Observations on Azadirachtin for the Management of Cabbage Caterpillar Infestation in the Field. *BCPC symp. Proceed., 63*, 371-378.

Mordue (Luntz), A. J., Evans, K. V., & Charlet, M. (1986). Azadirachtin, Ecdysteroids and Ecdysis in Locusta Migratoria. . *Comp. Biochem. Physiol, 85*, 297-301.

Mordue (Luntz), A. J., Zounos, A., Wickramananda, I. R., & ., A. R. (1995). Neem tissue Culture and the Production of Insect Antifeedant and Growth Regulatory Compounds. *BCPC Symp. Proceed 63*, 187-194.

ARTICLE 2: RECONSTRUCTION OF TEACHER EDUCATION IN SOMALI: THE CASE OF GAROWE TEACHERS EDUCATION COLLEGE IN GAROWE, PUNTLAND-SOMALIA

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Abstract

One of the areas which had been discussed in terms of education in Somalia was quality of teachers after collapse of central government in 1991. It's not until 2005 after the collapse of the collapse of Somalia government that the first ever teachers' college known as Garowe Teachers' Education Centre college (GTEC) was officially established in Puntland state of Somalia. The study was aimed to discuss the reconstruction of teacher education in Puntland. The study shed light the challenges of teachers' education in Puntland and provided recommendation to address these challenges. Therefore, this study outlined reconstruction of teachers' education in Puntland-Somalia and reform of teacher education in Somali since inception of formal education in the colonial era. It includes the current teacher education system in Puntland state of Somalia as model of reconstruction of teacher education system in Somalia which has played a big in boosting training of a pool of quality qualified teachers in Somalia but it currently limited by funding most especially after the withdraw funding by SIDA which was through Diakonia. Currently the education system in Puntland has two major challenges, funding the education colleges as well as recruitment and retention of well qualified teachers, both of which have an direct and indirect implications on the education quality. Therefore, if the of Ministry of Education (MOE) liaise the international donor community to find a reliable source of funding to the college as well as find mean of recruitment and retention of well qualified teachers in schools and then the education quality in the region area would gradually improve.

2.0 Introduction

Like elsewhere in Africa, formal education in Somalia introduced by colonial powers, particularly Italy and Britain those who colonized south and north Somalia respectively (Abdi, 1998; Yahye, 1985). In Somalia, a teacher training center was established in 1946 at both north and south regions of Somalia. Yahye (1984) wrote that in 1950s, teacher training was given special emphasis by training more qualified teachers at home or abroad. The education system in Somali had undertaken many reforms since introducing formal education in Somalia in particularly teacher education system as teacher is central to every education reform process. Thus the history of formal education in Somalia can traced before and after independent.

In the current world, education has been viewed as an instrument of change and safeguarding of culture and the school system was recognized as social institutions and major agent of education as well as teachers are considered as the heart of agent of education. Thus, improving the education will increase the education of an area is the most reliable and fast method of instilling a positive changes a given society on any place in this sphere. To this end, Teachers' Education Policy in Puntland (2006) reveals that there is concerns about the children who were failing to attain a complete cycle of education as they were dropping out of schools. In abide to combat an education policy was adopted to improve quality of our students through a good quality teachers. Therefore, this paper traces the history of teacher education in Somalia and reconstruction of teachers' education in Puntland-Somalia. This would help as a guide factor not only to establish more teachers' training college but also to boost the quality for those one already in existence.

2.1 Teacher Education before Independence

During the colonial period, there were only two teacher training centers for elementary schools for the whole of Somalia (Osman, 1986). Even then, at these two centres did not produce enough teachers to commensurate with required number teachers' force to null this existing gap by at that time. One of these two centers was in north and the other was in south Somalia. El Shibiny (1970) stated that a teacher training that was in north Somalia, which was first established at Sheikh district in 1946. This was one year pre-service teacher training program to train intermediate school leavers to become elementary schools teachers, but in 1952, the program was upgraded into two-year teacher training program that was aimed to

produce both elementary and intermediate school teachers. The center was transferred to Amoud and latter on it was again transferred to Hargeisa. The teacher Training in Mogadishu (the Scoular Magistrale in Mogadishu) was also established in the same year (1946) and it worked as in-service training center to upgrade the qualification of assistant Somali teachers, but in 1951, Magistrale started two-year pre-service training for intermediate leavers to train as elementary school teachers. El Shibiny (1969) notes that the Magistrale teacher training center started with 24 assistant Somali teachers.

The two centers (Hargeisa and Mogadishu) were unable to supply an adequate number of teachers to meet the rising demand. The centers were subjected to continuous change their program (Osman, 1986). This caused schools to depend on expatriate teachers (MOE, 1964, as cited by Osman, 1986). The Teacher Training Institute produced less than half of the expected number of teachers each year (about 40 instead of l00), but the number of Somali teachers grew from about 60 in 1950 to approximately 470 in 1959. Only 290 of the Somalis had teaching diplomas, the remainder being assistant teachers. Among the non-Somali teachers were Egyptians, Italians in the south and English, and Indian in north Somalia (Dawson, 1964).

2.2 Teacher Education (1960-1969)

At the time of independence in 1960, Somalia inherited two education systems that differed radically in regards to structure, curricula, and media of instruction. In South, the education system was five-year of elementary, three-year of intermediate and four-year of secondary with Italian medium of instruction, while north Somalia, the education system was three-year elementary, four-year intermediate and four-secondary school with Arabic as teaching language of elementary schools and the rest, English was medium of instruction(Hafez, 1973; Hussein 1988; Metwally, 1967). In addition, the education philosophy was based on colonial interest. Cassanelli and Abdikadir (2007) stated that both British and Italian colonial education was elitist, aimed primarily at training small cadres of Somalis to fill positions in the colonial administration.

Somali government was aware the importance of teacher training as the result Addis Ababa conference (26-30 April, 1962) of Ministers of education of African countries that about ‘improvement and expansion

of teacher training''. Through, the government accepted the importance of teacher training centers, but did not create secondary teacher college till 1968. Shortly after independence, there were four teacher training centers; Amoud, Magistrale, Takhasus, and National Teacher Training Center (NTEC). One was in north and the rest were south Somalia.

Teacher training in north started with one year pre-service training at Sheikh in 1946 and two-year in 1952, then it was moved to Amoud and again it was transferred to Hageisa in 1964. In 1966/77, it was ceased to admit new pre-service trainees (El Shibiny, 1970; Hafez, 1973). In south, the Magistrale (Mogadishu) was established in 1946 as teacher training center with one-year in-service program. In 1951, duration of the training was made three-year for intermediate school leavers. In 1965, it was stopped to provide pre-service training (El Shibiny, 1970; Hafez, 1973).

Also, there was another teacher training center called Takhasus (specialization) that provided four-year intermediate education, followed by two-year teacher training course to prepare Arabic teachers. This was affiliated to the institute of Islamic Studies. It was closed in 1967 (El Shibiny, 1969; Hafez, 1973; Melwally, 1969) and it was converted into four-year secondary school.

The problem of training and retaining qualified Somali teachers proved to be one of the most persistent challenges faced by the Somali government in 1960s. Dawson (1964) stated that in 1962, the Ministry of Education reported that 112 of 201 intermediate and secondary school teachers were expatriates, and only 89 Somalis.

In 1963, National Teacher Training Center (NTEC) at Afgio district close to Mogadishu started its training with 75 students. This was constructed by USAID and its operation undertaken by Eastern Michigan University. The aim was to train elementary teachers, but the graduates were assigned to teach intermediate schools. In the same year, the teacher training in Hargeisa and Mogadishu was increased from one years to three-year, with the first two-years, students attend their training centers at Hargeisa or Mogadishu, while

the final years students attend at national teacher training center. In 1966, the Ministry of Education decided to close teachers training centers in Hargeisa and Mogadishu and all pre-service teacher training was conducted at national teachers training center, while old teachers training centers admitted to conduct in-service teacher training(El-Shibiny, 1970; Hafez, 1973; Melwally, 1967; Osman, 1986). In the same year, the ministry of education modified the admission criteria as decided to be admitted only those who score either A or B grade rather than C and D grade as before (Osman, 1986). In 1968, NTEC was upgraded to a college of education to train secondary graduate for four-year teacher education course to obtain Bachelor of Education Arts (BA.ED) or Bachelor of Education Science (BSc.ED) to teach secondary schools (Hafez, 1973). In 1966/77, NTEC was the only teacher training center in Somalia (Melwally, 1967).

Shifting teaching service was phenomena that limited number of teachers in Somalia. Osman (1986) states that a large number of teachers left teaching service and joined the civil service, as this incident, the expatriate teachers found their way to enter education system once again. This is line with the report jointly prepared by the Ministry of Education and Ministry of Justice and labour that stated there is serious obstacles to reaching a satisfactory standard of education at the elementary and intermediate level is lack of trained teachers, while exact data is not available, it is believed that 50% of teaching force fail to satisfy the current criteria for qualified teachers, as eight years of education and three-year of training (Osman, 1986). To this end, in 1960, the ministry of education reduced duration of teacher training program from two-year to one year, but this limited the quality of teachers and did not bring enough qualified teachers. Moreover, when the Somali government announced English as teaching language of intermediate schools, it was noted that seriously affected teachers in south as the most of teachers were trained in Italian and they were unable to teach school with English medium of instruction.

Dawson (1964) wrote that in 1963, the Ministry of Education established a seven-month course for recruiting teachers of English, a six-week refresher course in English for graduates of the Magistrale in order to enable to teach intermediate schools with English as teaching language, and a two-month course in Arabic and English for elementary school teachers in the south. In the same year, the government established law for salary rates for civil servants, increasing teacher salaries by roughly 30 per cent. Hafez

(1970) noted that in 1968-69 some reports estimated that 50% of elementary teachers were unqualified teachers.

2.3 Teacher Education (1970-1990)

During the military rule in Somalia, the primary school enrolment has received deeply increased emphasis and development. The significant developments including; writing Somali script, launching literacy campaign, expansion of primary schools the whole country and others. Bennaars *et al* (1996) wrote as a result of these developments, the enrolment figures for primary schools rose from 28,000 in 1970 to 220,000 in 1976 and to 271,000 in 1982. Likewise, the number of primary schools increased from 287 in 1970 to 844 in 1975 and to 1407 in 1980.

During 1968-1972, there was no any primary teacher training center in Somalia. This was resulted after the Ministry of education ceased taking new intakes for three primary teachers training in Somalia in 1967 and in 1968 National Teacher Education Centre was converted to secondary teachers college. During 1972 - 1975, a two-year primary teacher program was established within the college of education (Lingappa, 1977; Osman, 1986). This program trained a total of 675 teachers.

In 1975, Halane Teacher Training Institute was established at Mogadishu to address the problem of shortage of teachers (Heinemann, 1999). The length for the training was one year after intermediate school and two-year from 1978 to 1984. Halane teachers training institute was ceased in 1985, when the Somali government set a plan to decentralize primary teacher training and to establish primary teachers in key cities such as Mogadishu and Hargeisa in 1986, Galkayo and Marka in 1987 and Baidabo in 1988 in order to supply qualified teachers to meet needs due expectation of increase of schools in the future (Osman, 1986). Enrolment in 1982-83 at Halane teacher training institute totalled 2,609 students, of them above 50% were female (Florida State University et al.1985; Osman, 1986). Only ten-day of teaching practice was including in the training program and the rest was teaching in classrooms. According to UNESCO report (1977, cited in Osman, 1986) that facilities at Halane Teacher Training Institute were inadequate due to lack of science laboratory and limited books in the library.

Training for secondary school teachers were done in Lafole College of education in Afgio from 1968 to1990. This was the only teacher education college that was used to train secondary teachers in Somalia. In 1968, the college started four-year bachelor of education. Osman (1986) noted that during 1973 to 1982, the college education offered two-year program due to need to produce qualified secondary teachers within short time. In 1985, it was increased the length of the college program into four-years. According to Florida State University et al.(1985) report, lafole enrolled a total of 1,014 students in 1982-1983. The annual cost per students were 236 USD and 1016 USD that 74% and 59% were for boarding cost in Halane Teacher Training Institute and Lafole college of education respectively. During early 1970s and mid of 1980s, Somali had made massive change in primary enrolment and teacher training as 1981-82, teacher-students ratio was 1:29.

Despite this, Somali had one of the highest teacher attrition rates in the world. Over 24,000 primary school teachers were trained between 1965 and 1981, but of this number only 8,211 were still in service by 1984. This represents an attrition rate of 66 percent, or 12 percent per year as noted by the World Bank and UNESCO (1987, as cited by Seif at el, 1996). This was resulted decline about both quantity and quality of education in Somalia due to high dropout. After civil war, the education system had completely destroyed.

2.4 Teacher Education in Puntland

Puntland State of Somalia was established as a semi-autonomous state in August 1998. It is one of federal state members of Somalia government. The education system is based on an 8-4-4 system and the medium of instruction in primary schools is trilingual (Most schools taught in Somali and Arabic, but there is very few schools use English as language of teaching), while secondary schools used English as teaching language, through some subjects (history and geography) taught in Arabic in very few schools, but Somali has only one language. Current gross rate emolument is 56% and 36% in primary and secondary respectively (Puntland school census, 2015).

The shortage of qualified teachers was major challenges of faced Somali education (Hussein, 2015). From 1985 to 2005, there was no pre-service primary teacher in Somalia. As result of lack of teacher training

institute, no certificate of teacher training is required to teach schools in Somali. During 2003-2004 School Survey identified a total of 9,088 primary school teachers in Somalia; 87 percent of these are men. About 60 percent of the teachers have a secondary school education and only 15 percent have graduate degrees. More than 60 percent did not receive pre-service training. Some 24 percent have not completed more than a primary level of education (UNICEF, school survey, 2004). Up to date there is still there is lack of enough qualified teachers in Somalia. UNICEF (2012 as cited by Eno et al. 2014) revealed that the poor quality of education is mostly attributed to the poor quality of teaching," where the teacher-student ratio in Somalia is estimated at "1:32", with caution that this figure "varies significantly" from one administrative zone to another. In mid of 1990s, UNICEF and UNECSO had offered short time in-service teacher training in Puntland.

In 2004, Garowe teachers Education College (GTEC) was constructed and equipped by SIDA (Swedish International Development Agency) through Diakonia-Swedish NGO. In 2005, Garowe teachers Education College started pre-service teachers' education with 46 primary teachers, with aim of strengthening primary and secondary education at Puntland. In 2007, the college has an enrolment of 135 pre-service students, 48 male and 87 female and a total of 689 in-service primary teachers (Joseph, 2007). As November 2005 to 2013, Diakonia facilitated running cost beyond cost of constructing college compound, guest house, and hostel with capacity of 64 persons, bore hall and others through SIDA fund.

At the same time, East Africa University (EAU) at Bosaso introduced a four-year bachelor of education. In 2006, both GTEC and EAU had offered first two-year in-service teacher training to certify large number of untrained teachers in Puntland through strengthening capacity of teacher training project under EU support. This training had two modalities, one was evening class that has done in urban cities and other was distance learning for teachers in rural areas for providing face-to-face teaching during school breaks and developing and distribution of self-study modules. This project laid down marked foundation of teachers' education in Somalia, particularly in Puntland and Somaliland.

In 2008, GTEC had introduced a two-year pre-service secondary education at the area of biology-chemistry, physics-mathematics, followed by history and geography in 2009 and in 2015, the college introduced diploma in English in secondary education. GTEC offers two-year secondary and primary education to address shortage of qualified teachers within short of periods. Also, it used double major system that contributes to address secondary school demand as student-teachers were trained to teach two major subjects. In 2013, Mogadishu University, Bosaso campus started Bachelor of Education at Bosaso and Puntland Science and Technology University started in-service teacher training at Galkayo. In 2012, GTEC offered a bachelor degree for its graduates to upgrade their qualification with collaboration of Islamic University in Uganda and in 2016 GTEC introduced a degree program. In 2015, the Ministry of Education in Puntland decided to centralize both primary and secondary teacher education. It had issued a decree letter that ask all education partners to conduct all teachers training at GTEC as public institution that has capacity to carried any kind of teachers training as it focuses only education program since 2005. In 2006, teacher education unit was established to manage overall teacher education training and it also teacher education policy in Puntland was drafted aimed at providing guidelines on development of teacher education. In 2012, the teacher education policy was revised. Although, the teacher policy was not fully in function and it needs to revise to address current needs of teacher education in Puntland.

Since 2005 and the college has trained more than 1613 teachers with many of its graduates working in primary and secondary schools across Puntland State of Somalia. The vision of the college is to be a centre of excellence and the leading institution in teacher's education, training and research in Somalia. The college offers a comprehensive set of courses including a bachelor of education, two year education diploma and in-service teacher's training, which all aim to assist trainees to develop the necessary skills for effective delivery of primary and secondary school curriculums.

Over the last decade, GTEC has been able to distinguish itself as the only public institution and as a premier institution for education and training of teachers in the region. Although the college continues to operate at its full capacity each year, yet there still is a severe shortfall in the supply of sufficiently qualified teachers across Somalia. In Puntland alone, if universal primary education is to be achieved by 2020, a total of 1,231 additional teachers need to be trained annually. Similarly, if universal secondary

education is to be achieved in Puntland by 2020, a total of 1,174 teachers need to be trained annually (GTEC business plan, 2014-2016)

At the beginning, the college faced shortage of enrolment due to misunderstanding of teacher education as well as low salary of teachers, but the currently, the college enrolment has increased as teacher education being more source of employment in Puntland. In addition, that the vast majority of secondary teachers in Puntland came other regions in Somalia and Kenya. Since the inception of the college, it was recognized the valuable contribution of the college to education in Puntland and Somalia as number of teachers who graduate from GTEC are currently in teaching service in Puntland/ Somalia. This is line with the mandate of the college that is "A qualified teacher for every Somali child".

Despite these achievement, there various challenges faced by teachers education in Puntland. These challenges include lack of continuous professional development program in teachers' education that stimulates more teachers to enter teacher service and increase retention of teacher in a long time in the schools. Teacher attrition, due to looking for high pay beyond education sector is one of challenges of teacher education in Puntland. Lack of allocated budget from government budget is also is major challenges that faced by the teachers education in Puntland. This was resulted that teachers education college not able to produce enough teacher for both secondary and primary schools in Puntland. In line this that GTEC has earlier enjoyed the support of Diakonia/SIDA which used to cover all the cost of the college. This support has enabled the college to continue operating at its full capacity. However, this support came to end in 2013 and the college did not get alternative source of fund, but, still the college is operating at its full capacity to qualify of teacher training through benefit from other donors (EU, USIAD, DFID, GPE, Norad, Qatar Foundations) which sponsor a given number of trainees and pay tuition fee as well as incentives of the training, particularly those who came out of Garowe city. However, this is did not replace the support from SIDA as this limited only tuition of given numbers of teachers that could not cover all the cost of the training.

2.5 Conclusion and Recommendations

In this study, an attempt was made to discuss the history of teacher education in Somalia since introduction of formal education in colonial era and how the teacher education reconstructed after complete destroy of education system in Somalia as a result of civil and lack of affective administration that restore administrative system in Somalia. After civil war, the various efforts were made by Somali community and international community to re-construct education system in Somalia (from primary to post-secondary education) that contributed vital input which significantly socially and development contributed. In teacher education, Puntland has a significant background after civil war as Garowe Teachers Education College is premier college of education that provides both primary and secondary teachers, but yet not produced enough teachers due to lack of budget from government and others. In the light of above discussions, it will useful to analysis the reconstruction of teacher education in Somali. Consequently, teachers' education increased job opportunity of teachers as it stimulates sense of qualified teachers, but still there is vast of untrained teachers that are currently in the teaching service in Puntland. It is clear that the college cannot retain its service with proper budget. Therefore, it is recommended that the ministry of education to allocated budgets to the college that enable the college significantly to contribute quality education in Puntland. Also, it is recommended that the Ministry of Education may liaise the international donor community to find a reliable source of funding to the college as well as find mean of recruitment and retention of well qualified teachers in schools, and then the education quality in the region would gradually improve. It is recommended that the ministry of education to carry out a study across regions to examine the impact of the college.

References

Abdi, A. A. (1998). Education in Somalia: History, destruction, and calls for reconstruction. *Comparative Education, Vol. 34, Issues3* , 327.

Cassanelli, L. & Abdikadir, F. Sh.. (2007). Somalia: Education in Transition. *Bildhaan: An International Journal of Somali Studies. Vol. 7* , 91-125.

Bannaars, G. A. (1996). *Mid-Decade Review Of Progress Towards Education For All: The Somali Country Case Study.* Nairobi.

Dawson, G. G. (1964). Education in Somalia. *Comparative Education Review* , 199-214.

El-Shibiny, M. (1970). *Somalia: Teacher Training, 21 January to 31 December 1969.* Paris: UNESCO.

Eno, O. A. (2014). Somalia: An Overview of Primary and Secondary Education. *Journal of Somali Studies. Vol. 1* , 11-33.

GTEC. (2014). *GTEC Bussiness Plan: 2014-2017.* Garowe: GTEC.

Hafez, I. (1973). *Somalia: Teacher Education, March 1970 to Noverment 1972.* Paris: UNESCO.

Hannemann, N. (1999). *The Education System in Somalia.* Copenhagen: Danish Refugee Council.

Huessein, S. (1988). The Transition of the Education System in the Somali Democratic Republic in the Post Colonial Years. *Proceeding of the Third International Congress of Somali Studies*, (pp. 411-416). London.

Lingappa, S. (1977). *Education and The Socio-Economic Environment-Recent Developments in Somalia.* UNESCO.

Metwally, A. (1967). *Somalia: English Teacher Training, 4 February 1962 to 31 December 1966.* Paris: UNESCO.

MoE. (2015). *Puntland: School Census.* Garowe: MoE&HE.

MoEHE. (2006). *Teacher Education Policy.* Garowe: MoEHE.

Ndungu, J. B. (2007). *Evaluation Report of Garowe Teachers Education College.* Diakonia.

Osman, A. M. (1987). Teacher Training in Somalia 1950 - 1985: A Historical Account. *(Unpubished Master thesis)* . The American University of Beirut, Lebanon.

UNICEF. (2004). *Survey of Primary School in Somalia-2003/2004.* UNECEF.

Florida State University et al.(1985). *Somali Country Plan 1985-1986:Enhancing The Effeciency of Educational System.*

Yahye, M. M. (1984). Management Education in Somali: The Case Study of SIDAM. *(Unpublished PhD Dissertation)* . University of California, Los Angeles, USA.

ARTICLE 3: KEY STRATEGIES IN EFFICENT AND EFFECTIVE SOLID WASTES MANAGEMENT IN GAROWE CITY

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Abstract

In the recent time there have been rapid urbanisation and human population worldwide. The current infrastructure plans in the most rapidly developing town seems not to be commensurate with the increasing population and possess a serious challenge in solid waste management. Garowe city is one of such area where there is rapid growth population and current solid waste management strategies seems not to be commensurate with increased

Wastes generated per day as evidenced by littered solid waste everywhere in the outcast of the town. There seen to be some methods used in managing of solid wastes but even then it seems to be ineffective but also inappropriate due the non-biodegradable generated. This study assessed; the type and nature of solid wastes, available method and challenges facing solid waste management in Garowe city. The researcher used observation and also served questionnaires to twenty (20) respondents in the collections of data. In in order to ascertain the quantity of different solid wastes generated in this town, ten (10) big buckets were supplied to ten families and requested to throw the solid waste per day for seven weeks , after this period there were sorted out sorted and weighed in kilogrammes for three consecutive weeks. The data collected by all the methods were analysed by computer program of Statistical Packages for Social Scientists (SPSS). The result of the study indicated that various solid wastes generated from this ranging from papers to metals and all were significant. Some of the methods that were found to be available in solid waste management in this area, included; burying and burning, littering everywhere, community mobilisation and recycling to the to the factory which were all ineffective. Several challenges were found to be curtailing the effectiveness of solid waste management and were; limited public awareness, mobilisation, finance, support from government and NGOs, lack of knowledge and cooperation in management of solid wastes. If the government and NGOs increase on cooperation with residents, more sensitisation of public awareness and mobilisation made and appropriate methods applied, then effectiveness and efficient of solid waste in cheaply be managed in the long run.

3.0 Introduction

Rapid increase in volume and type of solid waste and hazardous waste as a result of continuous economic growth, urbanization and industrialization has become a serious issue that demands a sustainable management of waste(Abhayawardana, Dayanthi W.K.C.N, S, Kuhathasan, & Perera, 2005). As the amounts of solid waste increases, the cost of removal increases too. Several management strategies have been employed world over like waste disposal, collection, treatment, recycling, composting, incineration and dumping (Deat & Dwaf, 1999)

Rapid increase in volume and type of solid waste and hazardous waste as a result of continuous economic growth, urbanization and industrialization has become a serious issue that demands a sustainable management of waste (Abhayawardana et al., 2005).Uganda's rate of urbanization is growing fast and accordingly the amounts of solid waste increase, the cost of removal increases too. Several management strategies have been employed world over like waste disposal, collection, treatment, recycling, composting, incineration and dumping(Environment, 2010)

In Garowe city, there are the current method used in management of solid wastes include community mobilisation and collection and dumping to the outcast of the city seems to be more pronounced (personal observation, 2015).Solid wastes are not only sound to put risks on human resources but also degrade the environment al as well as soil degradation. Therefore, this put the future generation at risk how would be used advanced technology to introduce plant cultivation since they could found the soil contaminated with non-biodegradable raw material among others. However with increasing population in this city,the current methods are seemingly not sufficient to effectively and efficiently clean the town. Therefore, there is need to reinforce the current method with more new and appropriate methods to couple with the increasing population so as to keep this town s clean.

It's therefore important that sound solid waste management strategies be designed after a thorough analysis of waste composition. For such a management plan to be successful there is need for comprehensive data on present waste situations, knowledge and capacity as well as proper use of environmentally sound

strategies, which is the basis for this study. This study therefore, is aimed at characterizing the solid waste by quantification, assess the current methods used, and examine the challenges faced in the collection of data. The data would in turn to be useful to all residents neither in Garowe as well as the entire Somalia nor only for their generation but to the future generation as well.

3.1 Methods and material

The study was conducted in Garowe, which is the capital city of Puntland State found in North Eastern part of Somalia.This city was chosen because it is currently experience rapid urbanisation and population as many people have fled from southern part to stay in it due to the relative peace and stability prevailing as compared to other part of the country. This has resulted into rapid increase population and in turn has posed serious challenges on solid waste management most in solid waste management and could be a health hazard in nearby future if not well manned (personal observation). The researcher will use a cross-sectional survey and experimental design in achieving the forth said objectives. Cross-sectional survey because the samples will be drawn from different levels of respondents and collected in the shortest time possible (Econ, 1996) who are directly involved in the generation and management of solid wastes while the experimental design was used in quantification of different solid waste generated in this town. The study population included twenty (20) respondent of which four of them where officials from the Ministry of Environment (MOE) and the respondents were member families residing in different parts of Garowe town. All the twenty respondents were given questionnaires and collected back with framework of two (2) hour to ensure their security. In case situation were respondents could not understand the meaning the questionnaires it was translated and explained to him in the Somali language to aid in getting the actual fact on ground in regard to this study. In the experimental ten big buckets were purchased and supplied to ten families where there were guided to be throwing every waste generated in their home and at the end of the week they collected and sorted into different categories and weighed and recorded. This was done for four consecutive weeks and average value recorded. The data collected by either method was analysed by a computer program of Statistical Package for Social Scientist Version 22 (SPSS version 22). For data collected from questionnaires they were encoded and entry made into the SPSS and descriptive statistical was used. For the data from experimental design entry code were entered into SPSS and analysed using one sample test. The result obtained were summarized as mass, level, mean difference significant level and percentages and presented in form of tables and figures.

3.2 Results and Discussions

Quantification of Different Solid Wastes Generated

Table 1 Quantification of Different Solid Wastes Generated

Nature and Mass (gm)	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Mass of Plastics (gms)	4.243	4	.013	3.00000	1.0368	4.9632
Mass of Polyethene (gms)	4.707	4	.009	2.40000	.9843	3.8157
Mass of Metals (gms)	4.243	4	.013	3.00000	1.0368	4.9632
Mass of Papers (gms)	3.833	4	.019	2.60000	.7169	4.4831
Mass of Food Staffs (gm)	4.243	4	.013	3.00000	1.0368	4.9632
Mass of Glass (gms)	3.651	4	.022	2.00000	.4793	3.5207

Source primary Data

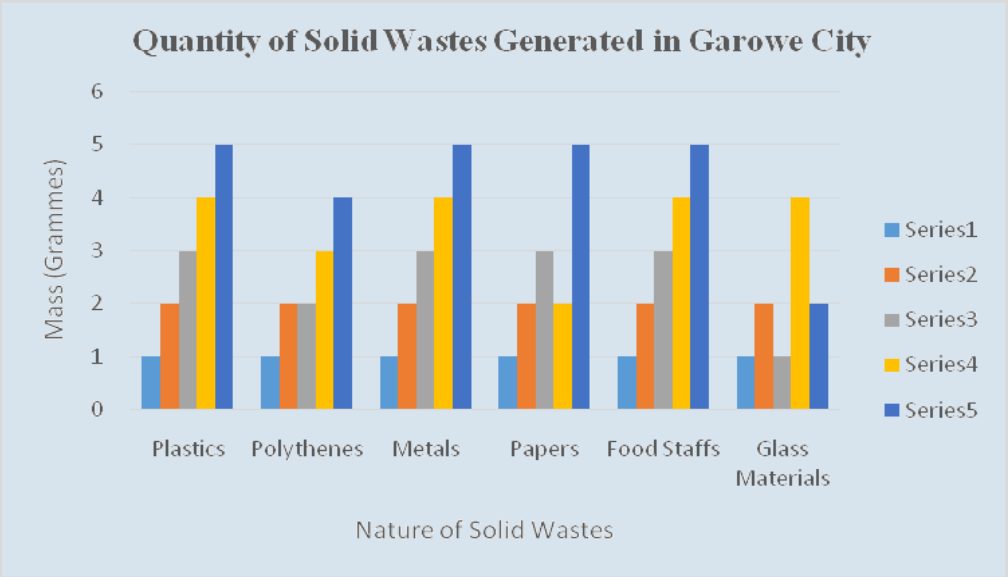

Figure 1: Different Types of Solid Wastes Generated Garowe City

The result in the table above shows that different solid wastes are generated in Garowe city. All the wastes generated in this town were significant high (p= 0.013, 0.009, 0.013, 0.19, 0.13 and 0.22). This mean that the solid wastes generated have potential risks to the health of citizens in this area. This is because the solid waste generated can be good habitat for microbes and well as arthropods. Thus, the availability of microbes and their spread is high and put residents in state of economic burden since they need to inject a lot of money in for treatment and yet the working capacity is reduced. Additionally the non-biodegradable solid wastes can cause serious soil as well environmental degradation and this put risky to the future generations who would have acquired technology of cultivation but find would find degraded soils are less productive. This not only affects man but also directly affect the domestic animal as there would reduce plant variety which cannot grow on the degraded soil. Since the resident in area entirely depends on meat as a source of protein as well as revenue. Thus, the economic crisis and malnutrition related problems would easily spark off. This is like the (Idris, Nassir, & Cong, 2003)and (Misra & Pandey, 2005)whereby it was reported that mismanagement of solid waste is hazardous to human and animal health as well as cause serious environmental problem as well as degradations. Therefore, its effect become more widely spreads across different categories of living-thing which including plants and animals as well.

Different Types of Solid Wastes Generated Garowe City

Table 2 Plastic Materials Generated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	13	81.3	81.3	81.3
	Disagree	3	18.8	18.8	100.0
	Total	16	100.0	100.0	

The results of the study indicate that 81 % of the respondents accepted that plastic are generated in this area while 19 % rejected (Table 2). This means that to a large extent plastics are generated on the large scale. Plastic are chemically known organic polymers that cannot be biodegradable and when anyhow dumped into the soil they are not recycled in the normal nutrient they cause serious solid degradation which affect the life of plant directly and indirectly animal since, they feed on the and thus, man. Like the studies conducted by (Nema, 2004) ascertained that increased that there was increased solid wastes in India town of Delhi because on increased population to commensurate with available methods to commensurate with the solid generated per day which had caused serious health and soil degradation problem as well to a large extent.

Table 3 Polyethene Bags Generated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	14	87.5	87.5	87.5
	Disagree	2	12.5	12.0	100.0
	Total	16	100.0	100.0	

Source: Primary Data

As is can be seen from table 3 the result shows that polyethene are generally common solid wastes in this town as 88 % of the respondents agreed on this and only 12 % opposed. This mean that there are lot polyethene are scattered, most shop use them packing bag of their good to their customer which ends up finding themselves in homes on daily basis. These are biodegradable polymers and combine with fragile method of solid waste management makes the whole town littered with polyethene bags. This does not make the town only dirty but also detrimental to human and domesticated heath both directly and indirectly. Observations made by (Chandak, 2010)reported polyethene are common solid waste in urban place in developing countries. This was attributed to their use as packing material in all trading centre and urban towns. He stressed however there were no clear methods to effectively manage them especially with increased urban population.

Table 4: Food Staffs Generated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	10	62.5	62.5	62.5
	Disagree	6	37.5	37.5	100.0
	Total	16	100.0	100.0	

Source: primary Data

It was found out that food stuffs are also generated in this area as solid wastes as 63 % and 37 % of the respondent respectively agreed and disagreed on this view. Most the food solid wastes were peel off from food and left over foods as well. This was not to be a serious challenges since there are easily biodegradable and can recycled into the ecosystem. However, the method of dumping them matters a lot since there are they can be good habitat and breeding place for arthropod like mosquito and housefly which facilitates the spread of hygienic and arthropod borne diseases. The study of(Chandak, 2010)also noted that food staff were less common in relatively dry area as solid wastes since there were few plant material generated. Even then those generated could be used as animal feed and easily biodegradable.

Table 5 Leaves Generated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	1	6.3	6.3	6.3
	Disagree	15	93.8	93.8	100.0
	Total	16	100.0	100.0	

Source: Primary data

The table above indicates that there were fewer acceptances of respondents on this issue and more rejection as supported by 6 % and 94 % of the respondents of leaves being generated in this area respectively (Table 5). This means that leaves are not common solid wastes by the fact that it is a dry area and so has limited plant materials. This area is a semi desert and so have few generated of plant materials which are mostly obtained from neighbouring places Even then the few leaves and plant material are eaten by the available animals and cannot be a serious problem in this area. Like the studies reported by Burney (2007) whereby he reported that leaves a major the composition of solid waste in different towns differed depending the temperature the economic activities. For example plant materials are not common in urban dry areas.

Table 6 Animal Wastes Generated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	11	68.8	68.8	68.8
	Disagree	5	31.3	31.3	100.0
	Total	16	100.0	100.0	

Source: Primary Data

It was as that found 69 % and 31 % of the respondent were pro and opposed the idea of animal wastes generated. The animals' wastes generated included mainly dungs and bone. This is because Garowe and surrounding district basically has many animals being reared and on daily basis are slaughtered and their bones thrown and hence a good number of them are scattered. The only item efficiently used after slaughtering of animals is meat and soft bone and are normally discarded and so found littered in the environment especially in dumping place. Therefore, this there could become a major source of solid waste and if not managed well it could be a serious health hazard to man. The previous scholars like (Tenywa, Nasinyama, & Sengendo, 2007)found animals' wastes harbour various pathogens and if not well managed could find themselves into water sources and this could and eventually affect human health as well as domestic animal.

Table 7 Glass Material Generated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	12	75.0	75.0	75.0
	Disagree	4	25.0	25.0	100.0
	Total	16	100.0	100.0	

Source: Primary Data

Glass material as solid wastes were seemingly common as 75 % of the respondents agreed and 25 % disagreed on this issue (Table 7). This means that glass are common at market and find themselves at home and eventually into the environment. The glass materials that were common are mainly used for packing drink and are not recycled into the factory places but instead after use are dumped into the environment. This makes them to be one of the common item in in various parts of this town. The danger in glass materials is that can cause physical damages to the animal and create wounds. This acts as an easy passways for microbes like those causing tetanus to penetrate the body which could common here due to presence of animal dungs. Burney (2009) glass materials as solid wastes were common and if not well managed could cause physical damage of the skin. Thus, rain season where there are animal dung, bacteria which cause tetanus penetrate through into human body common disease like especially if vaccination against has been ignored.

Table 8 Papers Generated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	11	68.8	73.3	73.3
	Disagree	4	25.0	26.7	100.0
	Total	15	93.8	100.0	
Missing	System	1	6.3		
Total		16	100.0		

Source: Primary Data

The results in table 8 shows that 69 % of the respondent agreed, while 25 % disagreed on issue of paper being generated as solid wastes. This is attributed to many schools and higher institution within town which use a lot of paper has purchased from stationery shops for use and at the end of it all there are dumped which affects which found littered in the environment. However, paper are not very common since there are easily biodegradable and in place like Garowe where there is scanty of grass there are mostly used as dry matter food for animal like goats and sheep as food. Like the finding of (Cornelissen & Otte, 2003) found out that urban places are characterised by many institutions like papers as solid waste are not common because they are easily decomposable and easily burnt into ashes and as well used as animal feeds where grass scarce.

Available Methods in Solid Wastes Management

Table 9 Burying in the Ground

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	6	37.5	37.5	37.5
	Disagree	10	62.5	62.5	100.0
	Total	16	100.0	100.0	

Source: Primary Data

The finding in table 9 shows that very few people use burying of solid wastes produced into the ground surfaces. This implies that the solid wastes are either dumped or other methodsare used in their management as supported by 38 % of the respondents accepted or 62 % refuted. This method is less sound especially for non-biodegradable solid wastes which are which are common in this area. In the study conducted by (Zerbock, 2003)reported that burying in the ground is less sound method in management of solid wastes especially for non-biodegraded area. He further stressed that it could a suitable method in management of biodegradable solid wastes. Thus, since Garowe is the most common solid waste are non-biodegradable then, this method cannot be encouraged.

Table 10 Burning into Ashes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	14	87.5	87.5	87.5
	Disagree	2	12.5	12.5	100.0
	Total	16	100.0	100.0	

Source: Primary Data

As seen in table 10, 88 % accepted and 12 % rejected use of burning into ashes an indication of it being a common method in management of solid wastes. Burying itself has advantage but it may not much be applicable the solid waste generated here like metal. However the frequency and complete monitoring of the whole process is necessary for complete combustion or otherwise result into incomplete. Even then complete burning non-degradable solid waste like polythene and plastic mainly generated in this town can solve the challenge of environmental but since the ash in it cannot be biodegradable cannot solve degradation and would directly affect the life of plant directly which have an indirect bearing on the life of animals. Secondly if these plastic are recycled back to the factory then they would serve to some extent earn some few dollar to some residents and in bid to get to earn they could not be common waste products. Findings reported by (Chandak, 2010) indicated that though burning could effective in management non-biodegraded material it less commonly used.

Table 11 Littering Everywhere

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	7	43.8	43.8	43.8
	Disagree	9	56.3	56.3	100.0
	Total	16	100.0	100.0	

Source: Primary Data

Littering anywhere as a method of data collection in this area did not receive much support as the findings indicated that 44 % accepted on this issue while 56 % opposed (Table 10). This means that it not a common practice. . This alone shows that though, there results in questionnaires, littering received little support favour, observations made by the researcher indicated that, there were a lot of kinds of solid waste everywhere especially at the outcast of the houses. Similar observations were made by(Abhayawardana et al., 2005) whereby it was ascertained that in urban and Peri-urban centre in the developing world solid wastes are littered everywhere.

Table 12 Recycling Back into the Original Setting for Reuse

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	5	31.3	31.3	31.3
	Disagree	11	68.8	68.8	100.0
	Total	16	100.0	100.0	

Source: Primary Data

The idea of recycling of solid waste was less sound as the finding indicates that only 31 % accepted while 69 % rejected of its use in the solid management (Table 12). This mean that solid wastes are generated which are neither reshaped for re-use nor taken back to the factory. In such a situation the best method which could effectively be used in is recycling as most of solid wastes are non-biodegradable. This would help combat the solid waste from economic burden to a source of income. This is in agreement(Aljaradin, Persson, & Hossam, 2011)that in developing countries solid wastes are poorly manage as they are not could recycled for reuse are and could have a financial implication loss as there are just wasted and just dumped and instead could turn into economic burden. Thus, instead of acting as a source it become a health hazard to germs and would yield an economic burden of treatment.

Table 13 Community Mobilisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	14	87.5	87.5	87.5
	Disagree	2	12.5	12.5	100.0
	Total	16	100.0	100.0	

Source: Primary Data

Inadequate community mobilisation was found as one of the most outstanding challenges used in Garowe in controlling and management of solid waste. This is supported by the evidence of 88 % agreeing while 12 % disagreeing on this view (Table 13). This method could serve the purpose since for effective solid waste management it must be everybody's responsibility in the cleaning of their environment of which solid waste is one of such activities. However, the frequency on how this is done matter matters in ensuring its efficiency and effectiveness. Observations also show that that frequency of community mobilisation in general take long time of about three months which compromise the effectiveness of this method in solid waste management. In the study conducted emphasised that it responsibility of every member of community to participate in cleaning the environment but its effectiveness as a method of solid waste depends on the frequency of community mobilisation. Thus, frequent mobilisation yield better results in

solid waste management. Also observation made by (Abhayawardana, Dayanthi, Hapilan, & Svadrr, 2005)indicated that poor mobilisation in developing town are ii partly to blame in solid waste management in developing towns.

Challenges Faced in Solid Waste Management

Table 14 Public Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	9	56.3	56.3	56.3
	Disagree	7	43.8	43.8	100.0
	Total	16	100.0	100.0	

Source: Primary Data

Public education has been found to be less done in this area in cleaning of the town as 63 % agreed while 38 % disagreed (Table 14). This is because in attaining any successful project then public awareness is very it equip people with necessary and knowledge of the advantages and disadvantage thus, increases on their participation. Public awareness remove ignorance from the community and become aware of effect of mismanagement of solid their environment and hence health generally. However, the approach used in this town seem not to be so appropriately as it something does once as there is no special committee have been setup for this particular cause. Findings reported by (Natamba, 2010) revealed public education as one of the most effective method in solid waste management as it has proved and worked in developed countries and so was also recommended for developing towns.

Table 15 Limited Finance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	7	43.8	43.8	43.8
	Disagree	9	56.3	56.3	100.0
	Total	16	100.0	100.0	

Source: Primary Data

As it can be seen the results indicated the 44 % of the respondents accepted on limited while 56 % rejected (Table 15). This means that there is limited finance as per the solid waste management by the current population on this town. But most individual do allocate little or no money at all in solid waste management. The limited finance as assessed at level of Federal and Municipality level where the document indicated no clear budget for cleaning the environment but instead some few fund are just mobilised whenever need arises. This makes it unpredictable on addressing this issue. Thus, without money none of method used in the solid management could be effective because public awareness and community mobilisation requires also financing so as to effect. In similar studies conducted by (Natamba, 2010)also showed that solid waste in developing town of Uganda also experienced similar hurdles in effectively managing solid waste due to limited finance.

Table 16 Limited Support from Government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	9	56.3	56.3	56.3
	Disagree	7	43.8	43.8	100.0
	Total	16	100.0	100.0	

Source: Primary Data

The result show some help come from the government as 56 % of the respondent agreed and 43 % disagreed (Table 16). This mean that government gives show some concern but not to be enough as per the current demand of solid waste thus, scattered everywhere in the outcast of the town is littered as solid wastes most especially the those that are non-biodegradable. Therefore, in such circumstance even if other factors are getting constant without an minimum government support nothing much can be attained as manifested by accumulated solid wasted in this town. Observations made by (Burney, Ellis, Flowerdew, Poll, & Prosser, 2007)where he clearly manifest that lack of good willing from government morally and financially had criticized effective solid waste in town of developing countries.

Table 17 Limited Support from NGOs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	10	62.5	62.5	62.5
	Disagree	6	37.5	37.5	100.0
	Total	16	100.0	100.0	

The finding show that 63 % and 37 % of the responded agreed and disagreed respectively on issue pertaining support from NGOs in management of solid waste under theme of keeping the environment clean (Table 17). Their major issue which still remain loophole hoe efficiently and effectively are solid waste question. This is because some the funds meant for solid waste are deviated to other votes which bring the whole exercise to standstill. Also studies conducted by(Burney et al., 2007) indicated that the contribution of NGOs toward environmental hygiene is so pronounced. In Puntland and Garowe the contribution of NGOs toward the improvement of the all aspect of life of resident is much more pronounced than even the government itself.

Table 18 Limited knowledge about wastes management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	15	93.8	93.8	93.8
	Disagree	1	6.3	6.3	100.0
	Total	16	100.0	100.0	

Source: Primary Data

The table 18 indicates that 94 % of the respondents lack necessary knowledge and skill on how effectively they can manage solid waste while 6 % disagreed. This show that management of solid waste in amongst the masses is still a long way to go, on basis on the common saying that knowledge is power. This alone indicates a lot of loop in public mobilisation and awareness processes. Therefore, nothing much can be done without boosting in the management of solid wastes as effective and efficient management requires everybody's participation. The studies conducted with previous scholar like (Zerbock, 2003)also unveiled little or complete lack of knowledge as an implication in the management of solid wastes.

Table 19 Lack of Public Awareness on the Danger of Solid Wastes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	9	56.3	56.3	56.3
	Disagree	7	43.8	43.8	100.0
	Total	16	100.0	100.0	

Source: Primary Data

The result show that there is lack of public awareness on pertaining this and this could be the source of limited knowledge as 56 % agreed while 44 % disagreed (Table 19). This makes it difficult to make solid waste a participative responsibility. Participative responsibility would the best solution in effectively management the environment within the limited framework of the available budget. This is like the results reported by (Zerbock, 2003)pointed out that lack of participative awareness, limited knowledge on implication of mismanagement of solid waste due to limited public awareness and community mobilisation have curtailed the effective implementation of this exercise especially in urban centres in developing worlds.

Table 20 Lack of Co-operation in Solid Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	7	43.8	46.7	46.7
	Disagree	8	50.0	53.3	100.0
	Total	15	93.8	100.0	
Missing	System	1	6.3		
Total		16	100.0		

Source: Primary Data

No good result of an activity can be obtainable without cooperation of any give society. As only 47 % while 50 % rejected (Table 20) an indication of inadequate cooperation in pertaining this matter. Therefore, in such serious there nothing much can be attainable at the end of the day. Like the finding of(Abhayawardana et al., 2005) reported that limited cooperation is largely to blame in solid waste mismanagement.

3.2 Conclusions

From the finding of this study the following conclusion can be made:

- Various solid wastes are generated in this town ranging from papers to metal. The level of solid waste generate was significant. Thus, pose serious environmental and health risks to the resident and their domesticated animals.
- Some methods were found to be in place in management of solid waste in this area and these included; burying and burning, littering everywhere, community mobilisation and recycling to the to the factory. However, none of the current method was found to been used effective and efficient in the solid waste management in this area. Even then, the most appropriate method they could be effective like recycling since most non-biodegradable wastes are mainly generated are so far this area so far less sound.
- Several challenges were found to be curtailing the effectiveness solid waste management and included; limited public awareness, mobilisation, finance, support from government and NGOs, lack of knowledge and cooperation in management of solid wastes.

3.3 Recommendations

The following conclusion may be valid:-

- Government and NGOs especially those concerned with environmental issue may work hand in hand with the public by creating public awareness and mobilisation to increase participative responsibility in solid waste management. This could sound relatively expensive in the long run but would sound be cheap in the long run.
- Since most of the solid waste generated in this area were found to benon-biodegradable then most method which could be emphasised is recyclingmethod. This would not only save the community from health and economic burden but would also serve as source of earning to a lesser extent. As these recycled solid wastes would be sold to factory owners for reuse.

References

Abhayawardana, G. P. R., Dayanthi W.K.C.N, S, H., Kuhathasan, A., & Perera, S. (2005). *Key Strategies for Efficient and Effective Solid Waste Management System for Galle Municipal Council Area.*, University of Ruhuna.

Abhayawardana, G. P. R., Dayanthi, W. K. C. N., Hapilan, S., Kuhathasan, A , & Svadrr, P. (2005). *Key strategies for Efficient and Effective Solid Waste Management System for Galle Municipal Council Area.* . Ruhuma: University of Ruhuna.

Aljaradin, M., Persson, K. M., & Hossam, A. (2011). Public Awareness And Willingness For Recycle In Jordan. *International Journal of Academic Research, 3*(1).

Burney, S. J., Ellis, J. C., Flowerdew, R., Poll, A. J., & Prosser, H. (2007). Assessing the Composition of Municipal Solid Waste in Wale, Resources. *Conservation and Recycling, 49*(3), 264-228.

Chandak, S. P.-M. (2010). *Trends in Solid Waste Management Issues* Paper presented at the Challenges, and Opportunities presented at the International Consultative Meeting on Expanding Waste Management Services in Developing Countries, Tokyo, Japan.

Cornelissen , A. A. J., & Otte, P. F. (2003). *Physical composition of household waste in Netherland*

Deat, H., & Dwaf, S. (1999). *National Waste Management Strategies and Action Plans for South Africa, Strategy Formulation*. Pretoria.

Econ, J. C. (1996). Research Measurement and Evaluation. In M. U. Kampala (Ed.).

Environment, M. o. (2010). *Annual Report of Volume Based Waste Fee, Republic of Korea.* Korea.

Hadden, R., & Robert, L. (2007). The Geology of Somalia: A Selected Bibliography of Somalian Geology, Geography and Earth Science. Engineer Research and Development Laboratories. *Topographic Engineering Center*.

Idris, A., Nassir, H. M., & Cong, T. L. (2003). *Overview of Municipal Solid Waste Landfill Sites in Malaysia. Proceeding of the 2nd Workshop on Material Cycles and Waste Management in Asia*. Tsukuba.

Misra, V., & Pandey, S. D. (2005). Hazardous Waste, Impact on Health and Environment for Development of Better Waste Management Strategies in Future in India. *Envir. Int'l, 31*(3), 417-431.

Natamba, S. L. D. (2010). *Waste Management Within Urban Areas in Uganda*. Makerere University Kyazanga Town Council,.

Nema, A. K. (2004). Collection and Transport of Municipal Solid Waste Training Program on Solid Waste Managmemnt. *Springer*.

Tenywa, M., M, Nasinyama, G., & Sengendo, H. (2007). *Annual Report on Waste and Flood*. Retrieved from

Zerbock, O. (2003). *Urban Solid Waste Management, Waste Reduction in Developing Countries.*

ARTICLE 4: TRACER STUDY OF GRADUATES OF GAROWE TEACHER EDUCATION COLLEGE, IN PUNTLAND, SOMALIA

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Abstract

One of the factors that determine the credibility of an academic institution is the level of job market of its graduates and preparing them for long term employment and the retention of their Jobs. Since its establishment in 2005, Garowe Teachers' Education College (GTEC) has graduated a number of teachers but how there are fairing on job market and their performance remains sealed. This current paper on tracer study of the graduates of the Garowe Teachers Education College (GTEC) aims at investigating the employment status of the college graduates for the last four years. The objectives of the study included determining the employment status of graduates and how the college offered the skills and competence support graduates needed to secure jobs and maintain them. The study employed tracer survey method with a sample size of 60 randomly selected from alumni graduates. The findings of the study showed that 78.33% of the respondents were employed and 45% of them secured their first job in less than three months after graduation. The study recommended how the employment level of graduates could be further improved such as the Ministry of Education acting on the initiative of work placement for current college graduates and those who are already in-service. This intervention will have great impact on the motivation, employability and the job retention of the college graduates which will make the college more productive.

4.0 Introduction

The Garowe Teachers' Education College (GTEC) is a public institution managed by a Board of Governors (BOD) on behalf of the Ministry of Education, Puntland-Somalia. The college was officially opened on November 2005 and is based in Garowe, the regional capital of the federated state of Puntland. The institution has, currently, an annual capacity of 464 new in-take of students.(College profile). Since its inception 10 years ago, the college has successfully trained around 4000 teachers with many of its graduates working in primary and secondary schools across Puntland State of Somalia/Somalia (GTEC semester Report, 2016). The vision of the college is to be a centre of excellence and the leading institution in teachers 'education, training and research in Somalia among others. The college offers a comprehensive set of courses including Bachelor of Education, degree, two- year diploma in education both pre-service and in-service teachers' training, refresh course, which all aim at assisting trainees to develop the necessary skills for effective delivery in both primary and secondary school curriculum as well as school management for head teachers (GTEC Business plan, 2014).

In the course of its existence, GTEC has become a prominent institution and distinguished itself as the only public institution, and as a premier teaching institute for education and training of teachers in the region. Although the college continues to operate at its full capacity each year, yet there still is a severe shortfall in the supply of sufficiently qualified teachers across Somalia (GTEC Business plan, 2014).

Since its establishment in 2005 by the Swedish based international organisation (Diakonia) through its liaise offices in Nairobi and Garowe, a large number of teachers have graduated from this colleges at different levels and programmes. The tracer study of graduates is vital for investigating the success of the institutions as being a benchmark to measure the external impacts of education programmes that institutions provide. Factors studies include the employment of the graduates, how graduates valued their experiences during their study and their transition to the job market. For the purpose of improving the education programmes offered in the college, the study also took into account the recommendations made by graduates about the necessary employment and competency skills that are more relevant to the current job market. These external factors assess how the education programmes are relevant to the economic and social development of the society at large. This would help the college fill in the missing gaps in the curriculum and make positive adjustments where necessary so as to improve employability and competence skills of the upcoming graduates in the nearby future.

In Puntland, unemployment rate is 70% of youth (14-30 years) that comprises 70% of total population (UNDP, 2012). As the result of increase of college graduates, securing employment opportunities for graduates is very important. Thus, the college is assessing employment of its graduates in order to fill knowledge and skills gaps that separate graduates and labour market needs, in particular teacher education areas. In line with the mission of the college that is to develop a sustainable pool of qualified teachers, the college traces how its graduates have entered into teaching service.

This tracer study aimed at determining the level of employment status of the graduates for the last four years (2012-2015). The tracer study sough to investigate how college-offered skills and competence are relevant to graduate's job. Also, it was aimed at determining what skills and competence that graduates recommend to include college curriculum that address labour market needs.

4.1 Methodology

This tracer study employed survey method because of its ease to get information and usefulness for assessing the opinion, and thoughts of the graduates from this college. The study population was two hundred GTEC graduates for the last four years and the selected sample size was 60 graduates comprising of 30% of total study population. A Simple random sampling technique was used to select the sample size from the list of 200 graduates provided by the registrar office. Questionnaire method was used to collect data on personal details, employment status and graduates feeling about skills and competence gained during their study at the college as well as the skills and competence that they viewed relevant to the current and the future labour market. The questionnaires were used because it enabled researchers to collect large amount of data in a very short time, easily conduct this study among educated people, guarantee the confidentiality of their responses and thus enable them to express their views freely. The data analysis of the study results were done by using SPSS statistical software where frequencies, percentages, mean and standard deviation parameters were automatically generated by the software for easy interpretation of the data.

4.2 Results and Discussion

Garowe teachers' Education College graduates for the previous four years (2012-2015) were traced. A total of 60 out of 200 graduates were interviewed. Data analysis is in line with the research objectives as to determining personal details, employment status, importance of skills and competence gained during study and recommended skills and competence from graduates.

Personal Details

Table 1, figur1 & 2 indicates profile of respondents in terms of age, gender, marital status and graduation year. An average age of respondents is 23 years with the standard deviation of about 2.88 years. The vast majority (88.3%) of respondents are below 25 years of age, followed by that 8% of the respondents are above 29 years and only 3.3% of the respondents are in the age range of 25-29 years old. As to gender 63.3% of the respondents are male and the rest (36.7) are female. As to marital status, that 78.3% of the respondents are single and the rest (21.7%) are married. Of these 81.7% were male. This indicates that most of the female did not get married after graduates. Table 1 reveals that 50% of the respondents graduated in 2015, while 30% of the respondents graduated in 2014 and the rest (20%) graduated in 2012. The college did not have any graduates in 2013 due to change of duration of the length of its courses.

Figure 1: Age of the Respondents

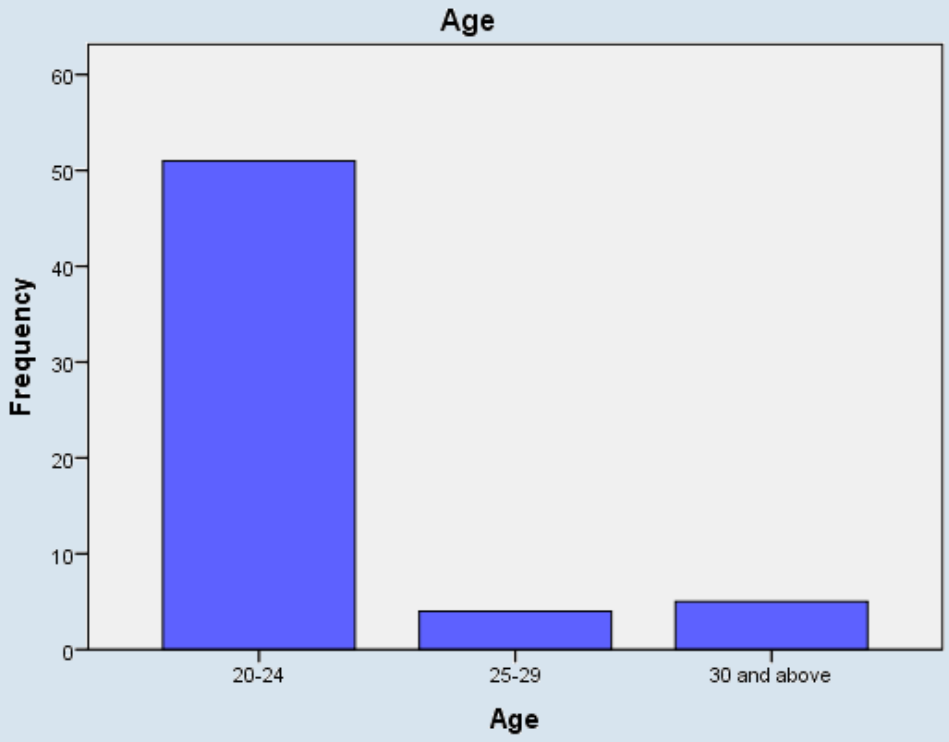
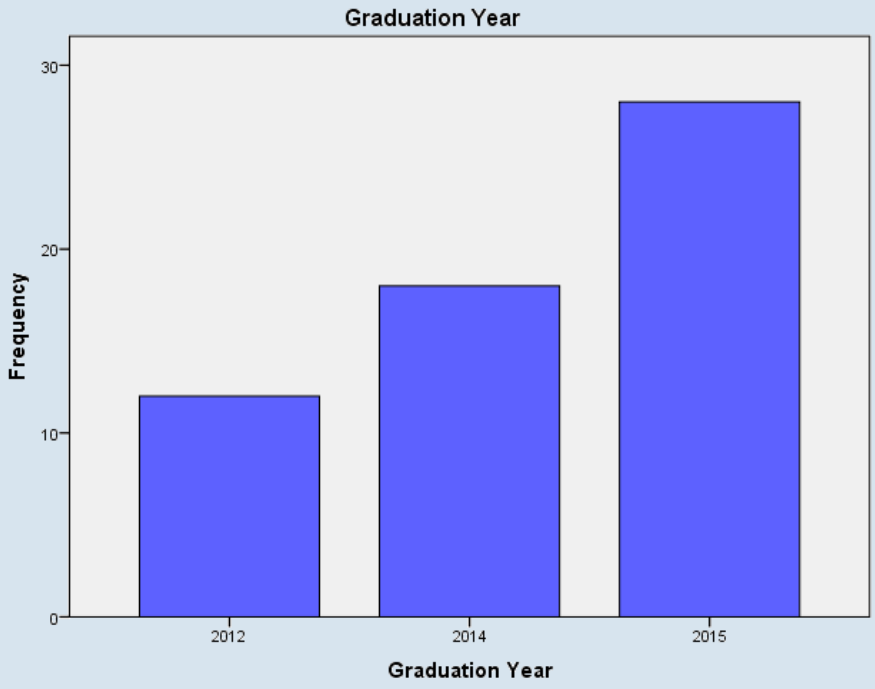


Table 1: Respondent by Sex and Marital Status

Category	Frequency	Percentage
Gender		
Male	38	63.30
Female	22	36.70
Total	60	100.00
Marital Status		
Single	47	78.3
Married	13	21.7
Total	**60**	**100.0**

2: Respondent by Graduation Year



Field of the Study

As the college offers only teacher education program, all the respondents studied teacher education in diploma or bachelor either in primary or secondary education. Table 2 indicates field of the study of graduates break down by course.

Table 2: Field of the Study

Level	**Area**	**Frequency**	**Percentage**
Diploma In Primary Education	Science	5	8.3
	Arts	5	8.3
Diploma in Secondary Education	Biology-Chemistry	17	28.3
	Physics-Math	7	11.7
	Geography-History	19	31.7
Bachelor of Education	Science	7	11.7
Total		**6**	**100.0**

It is obvious that the greatest (31.7%) number of graduates pursued in geography-history, followed by 28.3% of respondents completed biology-chemistry, while 11.7% of the respondents completed Physics-Math. The above table shows that 11.7% of the respondents completed bachelor of education and equal number (8.3%) completed diploma in primary education either in arts stream or science stream. This shows that majority of the graduates from this college had diploma in secondary teacher education.

Employment Status

One of main objectives of this study was to assess the percentage of graduates who currently at work. Table 3 shows the status of employment of the respondents.

Table 3: Employment Status

Category	**Gender**			
	Male		Female	
	#	%	#	%
Employment	34	72.3	13	27.7
Unemployment	4	30.8	9	69.2
Total	**36**	**100**	**22**	**100**

Table 3 shows that the majority (78.33%) of respondents were employed and 21.66% of the respondents are currently unemployment. Among those employed the majority (72.3%) were male. This indicates that schools prefer male teachers than female teachers. This findings contrast with perception about that GTEC graduates were not employed.

Nature of the Work

The study examined the nature of the work of graduates to assess whether graduates are in job related to their study or not. Table 4 presents data about the nature of work.

Table 4: Nature of Work

Category	**Frequency**	**Percentages**
Teacher	27	57.44
Non-teacher	20	42.55
Total	**47**	**100**

In terms of determining the extent of graduates who work as teachers, Table 4 indicates that 57.44% of the respondents were employed as teaching job, while 42.55% of the respondents were employed as non-teaching job. This finding may imply that most of the graduates are currently in the job market, but some of them selected occupation that not directly related to their skills, although education course enables graduates to carry out varied tasks. Hassan (2016) found that 66.9% of graduates held jobs directly related to their field of study while 33.03% of graduate held jobs which are not related to their field of study. The study also reveals that 35.4% of the surveyed university graduates work in the private sector which includes telecommunications, general trade companies and the financial sector while 14.7% of the graduates works in the public sector mainly in education and health services in Puntland, Somalia.

Combinations of factors are responsible which includes; poor condition, low payment and even negative attitude towards teaching services. Green (2006) asserted the teaching profession is a more tasking and with little pay in turn. He thus, emphasised that retaining people in such a profession require high motivational factors which could be both intrinsic and extrinsic in nature or otherwise loose well trained staff into other profession. A studies by Green (2006) have shown the high exploitation of teacher have led to their exploitation most institution take this as advantage with mind that once a teacher level he would be immediately replaced.

Change of Job

In order to determine mobility of graduates, they were asked if they change job and why they change if so. Table 5 shows data about change of job of the graduates.

Table 5: Change of Job

Did you change your job?	Frequency	Percentage (%)
Yes	31	51.7
No	29	48.3
Total	**60**	**100**

Table 5 shows that 51.7% of the respondents had changed their job due to various reasons that indicates below table. Nine graduates who did secure their first job are among those who did not yet change their job. This means that though some graduate train as teacher but end up into other job market other than practicing their profession. This is attributed to the nature of payment which creates negativity in the attitude toward the job. A study conducted by Armstrong (2005) found out that 45 % of teacher change their jobs into other profession or have the ideology of job change to due poor motivation.

Table 6: Reason for Job Change

Reason for Job Change	Frequency	Percentage (%)
Career development	14	45.16
Obtaining higher salary	7	22.58
Job security	1	3.22
End of Contract	9	29.03
Total	31	100.00

There are many reasons why the respondents quitting their job after quite sometimes. Table 6 reveals the most reasons that the respondents quitting their job. Nearly half (45.16%) of the respondents left their job due to career development, followed by 29.03% of the respondents left their job because of end of their contract, while 22.58% of the respondents quitted their job after getting high salary paying jobs and only 3.22% of the respondents left their job as choosing a secure job. In regarding to the reasons for quitting job, it could be said that career development, end of contract and looking for high salary are the main causes for leaving the job. It could be because of underpaid of teachers relative to what they could earn in other occupations. Hassan (2016) stated that strong majority of those surveyed (58%) who left their career stated that poor remuneration, poor working conditions and lack of career progression led them to drift away from their fields of study. Similar observation were made by Lindner (1998) where it was reported that combination of factors such motivation; low salary payment and job security among others are responsible for high teacher turnover rates many developing schools. However, the teaching jobs were considered the most source of employment in Puntland that attracted many teachers from other regions of Somalia.

Duration of Seeking Employment

Length of time that graduates took to secure for their first job after completion of the college was investigated. Table 7 indicates results about duration of seeking employment.

Table 7: Duration of Seeking Employment

Duration of Seeking a job	**Frequency**	**Percentages (%)**
Less than 3 months	27	45.0
Less than 6 months	11	18.3
Less than one year	11	18.3
More than one year	11	18.3
Total	**60**	**100.0**

Table 7 shows that 45% of the respondents took to get job less than three months, while equal percentage (11%) of the respondents took to secure their first job more than three months, more six months or more than one year. This mean the majority of graduate took less than three month to secure a job. However, the issue like job retention on performance basis need more serious discussion.

Job Offers

It is very important to look for job after graduates. Consequently, the study investigated how the graduates secured their current employment to find out the most effective ways of getting job. Table 8 shows results about how graduates were offered job.

Table 8: Mode of Job Offers

Mode of Job offer	**Frequency**	**Percentages (%)**
Through family and friends contacts	8	13.30
Through advertisement	17	28.30
Direct contact to the employer	17	28.30
Direct contact from employer	6	10.00
Others	3	5.00
Total	51	100.00

As to the mode of job offer, the results in Table 8 reveal that 56.6% of the respondents secured their job through responding advertisement or direct contact to the employers, followed by 13.30% of the respondents secured their job through family or friends contact, while 10% of the respondents obtained their first job through direct contract from employers and only 5% of the respondents secured their first job through internship or volunteer. The results in Table 8 revealed that the most common mode of job offering

were direct contract to the potential employer or responding to the advertisement. Similar study conducted by Hassan (2016) reveals that only 33.4% graduates find their jobs through formal processes including open competition for jobs advertised in newspapers or on the Internet. Study also finds that 21.1% of graduates find their jobs through friends, relatives and other connections. Another study was conducted by Sheik. on the job opportunity of Somali female graduates. The study found that most of interviewed female employees (42%) came to know about their current job through employee referral and through friends.

Monthly Salary Scale

The study assessed the level of monthly income of the graduates. Table 9 indicates monthly income of the graduates.

Table 9: Monthly Income

Income	**Frequency**	**Percentages (%)**
Less than 200 US dollar	7	14.89
200-300 US dollar	22	46.81
More than 300 US dollar	18	38.30
Total	47	100.00

Table 9 indicates that 85.11% of the respondents earn more than 200 US dollar per month. 55.5% of the respondents those who earn above 300 US dollar were employed non-teaching service and 63.8% of the respondents those who earn 200-300 US dollar per month were employed in teaching service. Recently Hassan(2016) conducted a study on Puntland higher education labour market survey. In this study, the finding shows 39.5% of the graduates earn 300-499 USD as net monthly income from jobs in the private and public sectors. Also 24.2% of the graduates surveyed earn less than 300 USD as their monthly salary. Sheikh () conducted a study on job opportunity for Somali female graduates. He found that around 44% of interviewed female workers earn less than $350 per month, and 32% earn more than $500 per month.

Relevance of College-Offered Skills and Competence to the Graduates' Job

Investigating of how college-offered skills and competence are relevant to the graduates' job was one of main objectives of the study. A total of 51 % graduates who obtained their first job reported that the skills and knowledge acquired during the study had helped them to secure job and maintain it. The findings shows that respondents who work as teacher reported that lesson plan, scheme work, varied teaching methods, class managements, learning psychology, setting appropriate exam, presentation skills contributed to find a job related to practice of the their study. Also, the respondents who work as non-teacher reporter that communication skills, report writing, interpersonal skills, leadership, problem solving, self-discipline and others contributed to obtain and maintain a job. This means that to a large extend the skills provided at the college are vital in relation to the job market in Puntland.

Feed Back

The respondents were asked to recommend skills and competence that they realised to be included in the curriculum of the college or to be given more emphasis. Most of the respondents (75%) did not make any recommendation and the rest suggest to strength the communication skills. However, it is necessary to conduct boarder study in order to find out concrete recommendations on skills to be included in the curriculum of the college as the needs of the labour market in Somalia.

4.3 Conclusion and Recommendations

Conclusion of this study is based on the study findings in relation to employment status, how the skills and competence provided by the college are relevant to the graduates' current job and what skills and competence that graduates feel are relevant to the labour market in Puntland that is necessary to include the curriculum of the college. The study revealed that 78.33% of the respondents were employed, while nearly 60% of the respondents were employed in teaching service and the rest was employed non-teaching service. This indicates that significant number of college graduates had entered into labour market. The findings show that 45% of the respondents secured their first job within less than three months. The study revealed that nine out of sixty respondents did not secure still a job. The study stated that direct contact to the employers and advertisements were the most mode of job offer. Fifty-one out of sixty respondents who entered in to labour market reported that skills and competence that they acquired during their study at the college had help them to secure job and maintain it. One-fourth of the respondents suggested to strength the communication skills. The study asks the ministry of education, Puntland to recruit college graduates immediately after their graduate in order to enable them to work at schools. In its recommendation, the study asks the college to strength its course on career development that enables to graduates to secure job. Also it is recommended to the graduates to make direct contact to the employers as one of the most mode of job offer.

References

Armstrong, M.A (2005) "Handbook of Human Resource Management", Practice, New Delhi: Kogan Page India.

Lindner (1998) Understanding Employee Motivation: E journal of Extension: **36**:3

Green, W.K., Wu, C., Whitten, D., and Medlin, B (2006) "The Impact of Strategic Human pay"? Employee Relations, **27**(2)141-159. 172 European Journal of Economics, Finance and Administrative Sciences - Issue 24 (2010)

GTEC(2016). GTEC Annual Report: 2015/2016

GTEC(2014). GTEC Business Plan: 2014-2017

Hassan, W. M(2016). Puntland Higher Education Labour Market Survey: MOE&HE, VU, Care International(Draft), Garowe, Puntland

Haunstein, N.M.H(1998) Training raters to increase the accuracy of appraisals and the usefulness of feedback. In Smither, J.W. (eds.), Performance Appraisal: State of the Art in Practice, San Francisco: Jossey-Bass.

Sheikh, A. Y(). Survey on Job Opportunities for Somali Female graduates. SomaliRen: Mogdishu. Avaible: http://*fursad.so/wp-content/uploads/2015/06/**Survey**-on-**female**-**graduate**.pdf*

UNDP Somalia (2012) *Somalia Human Development Report 2012: Empowering Youth for Peace and Development* (2012). Available from http://hdr.undp.org/sites/default/files/reports/242/somalia_report_2012.pdf

ARTICLE 5: FACTORS INFLUENCING FEMALES' ACCESS TO HIGHER EDUCATION IN GAROWE DISTRICT, PUNTLAND

HALIMA ABDI JAMA (MoE&HE, Gender Unit)

Abstract

Access to higher level of education by female students in developing countries including Somalia has long been a question of debate. Puntland sounds to be one of the areas in the world which has suffered from this education catastrophe to date. This study therefore, analysed the factors influencing females' access to higher education in Garowe district of Puntland State of Somalia. The researcher used descriptive survey design since various categories of respondents were involved and it could enable appropriately determine the sample population from determination of the sample size form the target population. The sample size of the study was one hundred fifty (150) respondents which include female workers at the Ministry of education and female students to selected Universities. Female workers were selected by purposive sampling technique since there were the key informants in the study while all female students were selected by stratified random sampling technique to cater for variation in ages and region of birth. The researcher used both questionnaires and observation in data collection from respondents. Question used were both structured and close-ended questionnaires. The results revealed that there are a lot of factors behind the low rate of access to higher education for the female gender. Some of these include lack of enough universities, females' lecturers with separate offices, high costs of universities and early marriage which contributes to the challenges brought about by house chores and family responsibilities. It was recommended that: the government of Puntland through the Ministry of Education and Higher Education (MOEHE) and private sectors may provide support for enlarging and enhancing local universities to facilitate to attract female student so as to boost access to higher education in the coming two years.

5.0 Introduction

Many acts and conventions recognizes education as a one of the human rights as well a powerful instrument to social development. Margret (2011) stated that many scholars and practitioners agree that education is important for individual intellectual enlightenment, for growth and for national development. UNESCO (2012) pointed out that there is a preference to males over females in education, which has been a marked feature since ancient societies, practice that has shaped today's gender disparities in this sector in virtually all countries but it high discrepancy is more pronounced in the developing world

Kelly and Ellott (1982) point out that woman remain under represented at all levels of educational programs, whether in formal or non-formal, few receive technical and vocational training and thus account for a very small proportion of enrolment in the all forms education sectors. According to Johnson (2011) some cultural and societal implications that exert great influence over young females and their persistence towards education. These practices are not only complex, but are also deeply impeded by societal customs that may even hamper the girl child education before completion of the secondary education level.

In Puntland, in terms of the higher education enrolment rate, today there are eight (8) universities and 6 colleges with student enrolment of 4,058 of whom 3,286 (81 percent) are male, and only 771 (19%) are females. The six (6) colleges currently enrol 1,260 students of whom 970 (77%) are male and 290 (23% percent) females' (Sector Functional Assessment 2012). This means at that at both either tertiary level of education female student are under-represented. Although ministry of education in Puntland conducted awareness on importance of female education through media, state-wide campaigns to increase female participation of all level of education, but there only 19 % of females' students attend at tertiary higher education institutions in Puntland. An implication that female student in tertiary level in Puntland in general and Garowe in particular is still under-represented. Thus, a platform study on the factors underlying the accessibility of female student to higher level education is urgently needed in this area. This study seeming have all the qualities and would a yardstick used all stakeholders interested in promoting girl child education in this area.

5.1 Methods

The study on Factors Influencing Females' Access to Higher Education was carried out in Garowe District, Puntland State of Somalia. The researcher used descriptive survey research design to investigate the current situation in regards to the factors influencing females' access to higher education in Garowe. Best and Kahn (1993) describes descriptive survey design as a form of design that presents existing conditions, practices, beliefs, attitudes or opinions held, processes going on and trends for developing to interpret meaning. Thus, in this pursuit survey research would help to investigate into the deep root of the current challenge at hand rather than mere addressing symptoms. The target population of this study was females' staff at the Ministry of Education and females' students at three universities of Puntland State; East Africa and Bosaso universities are which are more pronounced in Garowe. Both questionnaires and observation were used in the collection of data. The questionnaires designed were closed-ended questions with target of restriction to the specific response rather.

The researcher administered questionnaire to one hundred fifty (150) respondents which represented 15 % of the targeted population the selection of sample size was done both stratification sampling, and purposive sampling. A total of 146 female undergraduate students from three universities in Garowe with seven faculties as development studies, public health, business administration, law and shari'a, computer science, pubic administration and political science were selected. The rest of the respondents were female staffs at the Ministry of Education (MOE). Female staffs selected by purposeful random sampling technique since there were key informants in this study. Female students were selected by stratified random sampling to cater for various in age range and location. All quantitative data was entered in the SPSS program to assist in the analysis. Qualitative data was classified and encoded and then also then analysed by the same computer programme. Frequencies and percentages techniques were used to analyze quantitative data and its interpretation. All data was presented in their respective themes in line with the study objectives.

5.2 Results and Discussion

The study on Factors Influencing Females' Access to Higher Education was conducted in Garowe District, Puntland. The researcher used both questionnaires and observations in the collection of data. Frequency and percentages were used for easy analysis and interpretation and data was then presented in the table form as per each study objective.

Shortage of Higher Education Institutions in all regions in Puntland

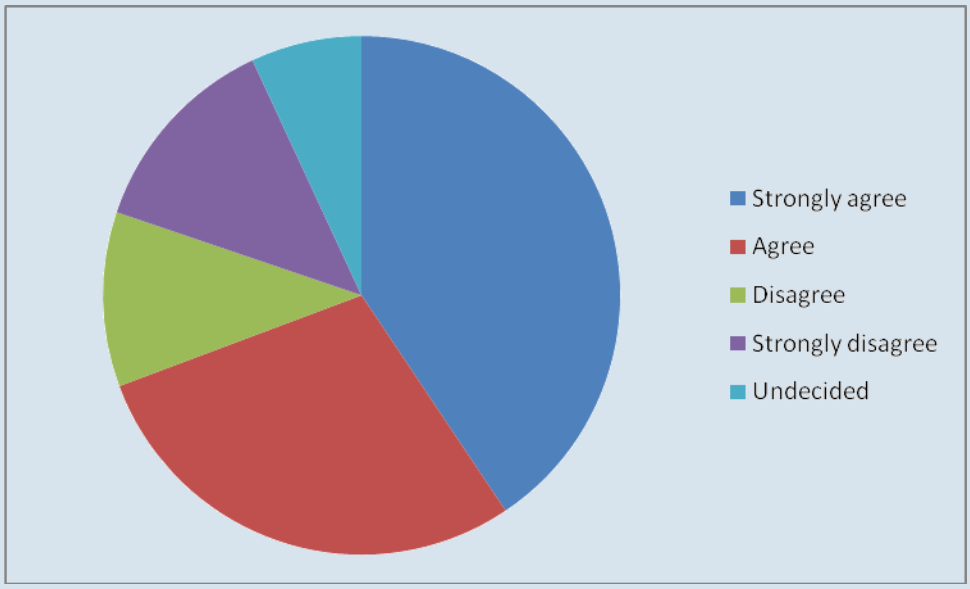


Figure 1: Shortage of Higher Education Institutions in All Regions in Puntland

As it can be seen the findings in figure 1, shows that the majority of respondents (70%) agreed and strongly agreed that there are no enough higher learning institutions in the all regions while 28.7% in this regard. This means this is one of the contributory factors to this discrepancy in low enrolment of female student at tertiary level in this area.

Observations also indicated that even the few available institutions have inadequate facilities to attract and keep girl child due their fragility.

Table 1: Lack of Availability of Boarding Facilities at Institutions in Puntland

Response	**Frequency**	**Percentage (%)**
Strongly agree	66	44.00
Agree	44	29.33
Disagree	24	16.00
Strongly disagree	14	9.33
No comment	2	1.33
Total	**150**	**100.00**

Source: primary data

The results in table 1 indicates that the majority (73 %) of the respondents strongly agreed and agreed that on the issue no boarding facilities for females in the targeted universities. This indicates that the lack of boarding facilities in all the few available universities to female student is limited. According this affects female students especially those who come from other region or districts of Garowe other than Garowe due to lack of accommodation. This has been worsened by high costs on maintenance of these disadvantageous students in term of renting and feeding which hamper female access to higher education.

Table 2: Availability of Female Preferring Specialization Course at Universities

Response	**Frequency**	**Percentage**
Strongly agree	49	32.70
Agree	53	35.30
Disagree	14	9.30
Strongly Disagree	26	17.30
No comments	8	5.30
Total	**150**	**100.00**

Source: Primary Data

It was found that 68% of respondents either strongly agreed or agreed limited course at their courses at university specializations preferred by females. Psychologically learners put more effort and perform best in areas of interest. As a result most female either looks for opportunities elsewhere where there are preferred course of their choice or lose interest in the whole system. Even those are force by their parent to attend such course in local universities outside their interest may not perform to the expected standards as reflected in their result and ability to apply the knowledge and skill thereafter.

Lack of Accreditation of Local University Certificates

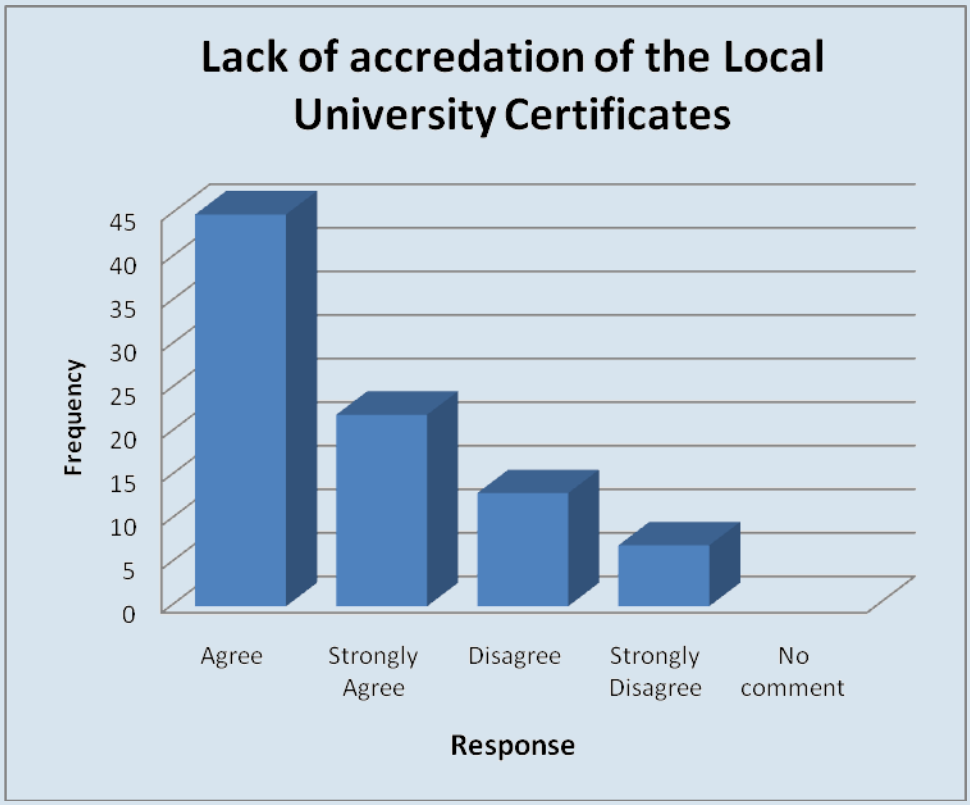


Figure 2: Lack of Accreditation of Local University Certificates

The result in the above figure points out that 54% of the respondents either strongly disagreed or disagreed that there is low accreditation of local universities and their certificates not recognized by regional universities or other countries. This reveals that the females are not confident about the quality and standards of the local universities. This is against that that many graduates from local universities pursued their post graduation in various universities in the region and elsewhere that shows quality of the local university. Even lack of accreditation limits their job opportunities to only Somalia as other countries would not have trust in their qualification. As a result many of female students struggle to get scholarship or at time are sponsored by their parent to acquire their studies elsewhere in the world.

Local Universities Meet International Standards

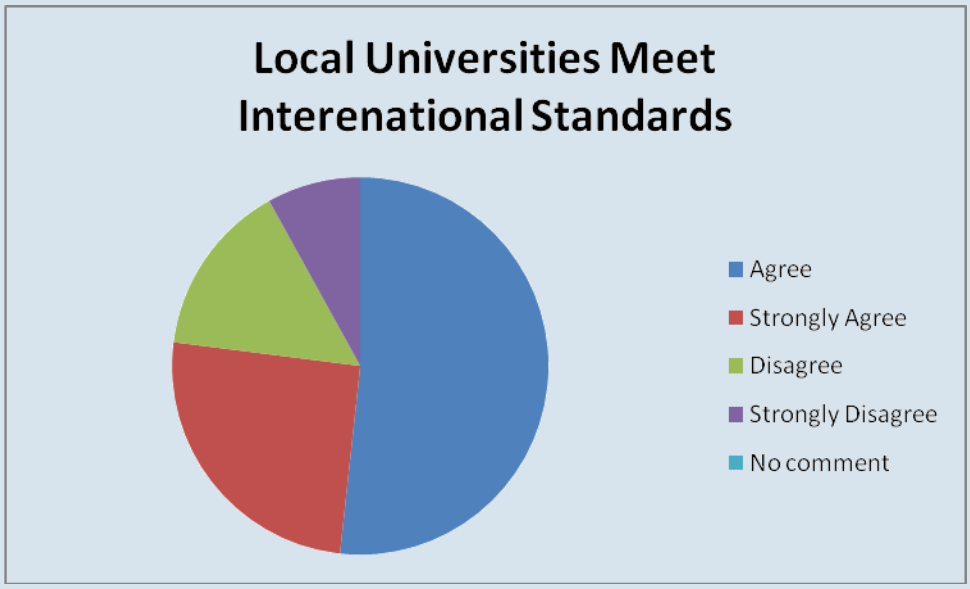


Figure 3: Local Universities Meet International Standards

As it can be seen from figure 3 above, the finding of the study, indicates that the majority (74%) of respondents strongly agreed and agreed that some universities do not meet international standards. This reveals that the females believed that learning or pursuing an education at a local university is a waste of time because they do not meet the international standards of universities. With such biasness already embodied in their mind study in the local university to them is the last resort. Therefore, on this basis some female are left with only two options to either get opportunities to study abroad or dropout before completion of university level.

Table 3: Females Travelling with Escort

Response	**Frequency**	**Percentage**
Strongly agree	80	53.30
Agree	30	20.0
Disagree	31	20.70
Strongly disagree	1	0.70
No comment	8	5.30
Total	**150**	**100.00**

Source: Primary Data

Table 6 shows that 73.3 % of the respondents either strongly agreed or agreed that females do not travel to learn in other regions without their muhran (guardian). This is an Islamic principle in trying to avoid harassment of females as they travel to and from school. For this reason many parents are unwilling to send their daughters to higher education institutions that located out of their location. This combined with lack or limited accommodation facilities the universities limit most female student from other district from attending their education in Garowe universities due to fear of negative consequences of the parent on their daughters.

Table 4: Adequate Sanitation Facilities in Local Universities

Response	**Frequency**	**Percentage**
Yes	112	74.66
No	38	25.33
Total	**150**	**100.00**

Source: Primary Data

Table 4 indicates that the majority (74.66%) of the universities have enough facilities and adequate sanitary conditions. According to the researcher's observation, there is lack of sanitation items that necessary for female make their life uncomfortable to stay at the university. Even then the few who have got some interest to study are discourage an this further lock out those who had already lost trust and interest in the whole system.

Table 5: Separate Offices that Address to Females' Needs at the Universities

Response	**Frequency**	**Percentage**
Yes	38	**25.33**
No	112	74.66
Total	**150**	**100.00**

Source: Primary Data

The finding in the above table indicates that the majority of the respondents (75 %) of the universities do not have separate offices that deal with female' affairs and needs. This shows that the universities are male dominated due to limited female staff. This is not attracting females considering enrolling to university or higher learning institutions. Female sexes generally have a number of issues which need a special office to address them. Therefore, lack of such offices leaves them locked up with a number of challenges which could otherwise be solved. As a result many either leave before completion of the university course or completely do not join.

Table 6: Presence of Female' Lecturers as Role Model in the Universities

Response	**Frequency**	**Percentage**
Yes	0	**0.00**
No	150	100.00
Total	150	100.00

Source: Primary Data

The result in table 6 reveals that 100% of the respondents rated that local universities do not have female lecturers and all the lecturers are male. The researcher recognized through observation. Female lecturer in the higher education institutions contributes increasing female enrolment of higher education institutions. This is in line with finding of UNICEF (2012) where it was emphasised that the lack of female teachers or lecturers as role models contributes to low participation and retention of females in school or higher education.

Table 7: Equal Chances of both Male and Female during Lecture Time.

Response	Frequency	Percentage
Yes	112	74.66
No	38	25.33
Total	150	100.00

Source: Primary Data

It was found out that 75 % of the university lecturers give equal chance for both male and female during class activities and that they are aware of their needs. However, 25 % of the respondents believe that male lecturers do not give consideration for female students in class activities. Though sounds a small fraction, but since female students are fragile what could considered as minor may be contributing much on limitation of their acess to higher education in this area. There are various researchers that support this finding on lack of equal consideration of female students from male lecturers in higher education.

Cost of Universities is Unaffordable.

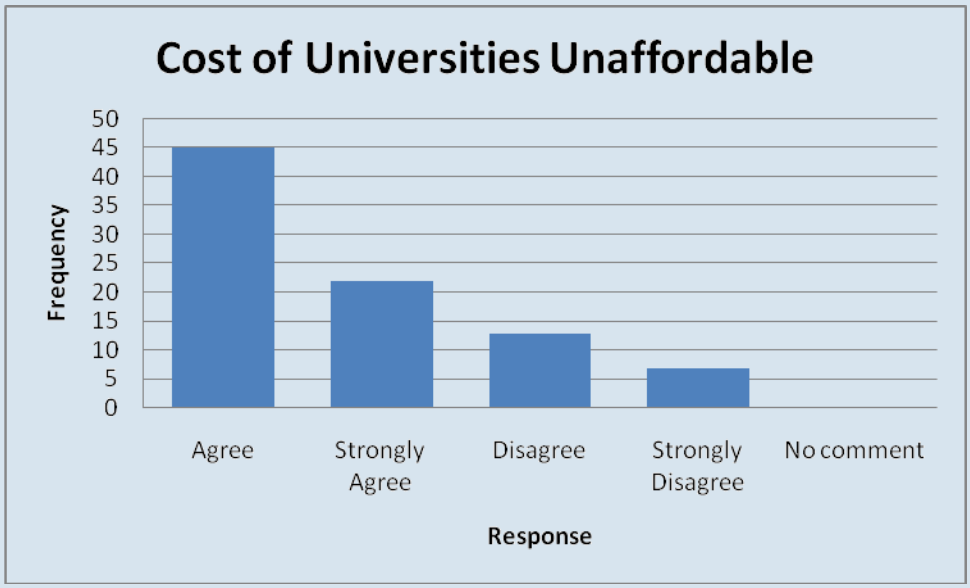


Figure 4: Cost of Universities is Unaffordable.

Figure 4, reveals that 66 % of the respondents strongly agreed and agreed that the costs of universities are unaffordable. As there is missing responses, it is difficult to analyses above. However, the cost of universities is affordable in comparisons other the universities in east African countries. But the definition of affordability varies depending on the economic stability of country and value attached to that aspect in question.

Table 8: Local Income Families Prefer Education Boys than Girls

Response	**Frequency**	**Percentage**
Strongly agree	57	38.00
Agree	45	30.00
Disagree	23	15.30
Strongly disagree	11	7.30
Missing rating	14	9.33
Total	**150**	**100.00**

Source: Primary Data

Table 8 shows that majority (68%) of the respondents either strongly agreed and agreed that low income families prefer to send the boy to school than girls. Thus, the costs of the university also contribute those females secondary graduate to not access to higher education because university cost. This means that parents themselves only give chance for girl to attend education when they have enough money or otherwise compromise it at expense of boy.

Table 9: Effects of University Transportation on Females' Access to Higher Education

Response	Frequency	Percentage
Strongly agree	71	47.30
Agree	39	26.0
Disagree	9	6.0
Strongly disagree	14	9.3
Missing rating	17	13.33
Total	150	100.00

Source: Primary Data

As seen in table 9 the findings points out that 73.3% of the respondents rated either strongly agreed or agreed that is difficult to the parent to pay transportation cost. The reality on the ground is that transportation is very costly because all the universities are far away from the residential places. This means that girl who parent cannot afford the daily transportation expense either walk to the university or lose interest in acquiring the university education. Thus issue of economic factor on the access of female student to university or tertiary education in Garowe cannot be ruled out.

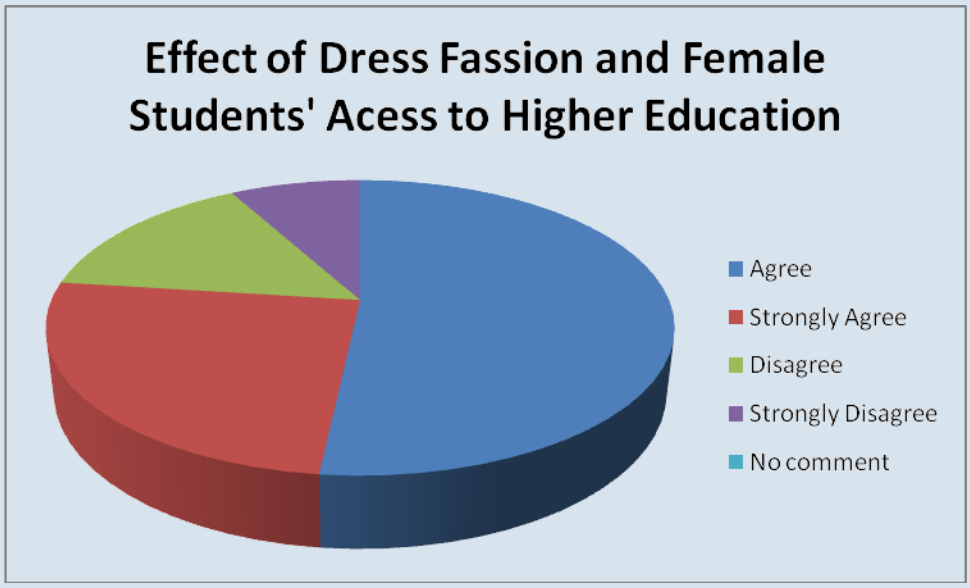


Figure 5: Effects of Wearing Fashion Dress and Shoes on Female' Access to Higher Education

As seen in figure 5 the result unveils that the 45.3% and 23.0% of respondents rated either strongly agreed or agreed on the needs of female students fashionable clothes during higher education enrolment respectively, while, around equal percentage (13.3% and 12.7%) rated either disagreed or strongly disagreed respectively. This indicates that some of the female who graduated from secondary school remain at home because their parents are not able to buy them beautiful, expensive fashionable dresses. This is because higher education is seen as a high status environment and that does not have uniforms. Thus, most girls who do not afford fissionable clothe feel out of lace and may end up not access higher level of education.

Table 10: Parents Unable to Pay Daily Pocket Money

Response	Frequency	Percentage
Strongly agree	47	31.30
Agree	39	26.0
Disagree	52	34.7
Strongly disagree	10	6.7
Missing rating	2	1.33
Total	**150**	**100.00**

Source: Primary Data

Table 10 reveals that 31.3% and 26% of the respondents either strongly agreed or agreed that the parents are unable to give the female students daily pocket money that is used during university classes, while 34.70% and 6.7% of the respondents either disagreed or strongly disagreed that parent are able to provide pocket money for refreshment during class breaks. This implies that income levels determine the accessing of females to higher education. Even then female sex naturally has more desire of admiring and if given some daily pocket money they can be able to save and buy some item which their parent many not provide to them directly.

Early Marriages Limits Females' Enrolment at the Higher Education

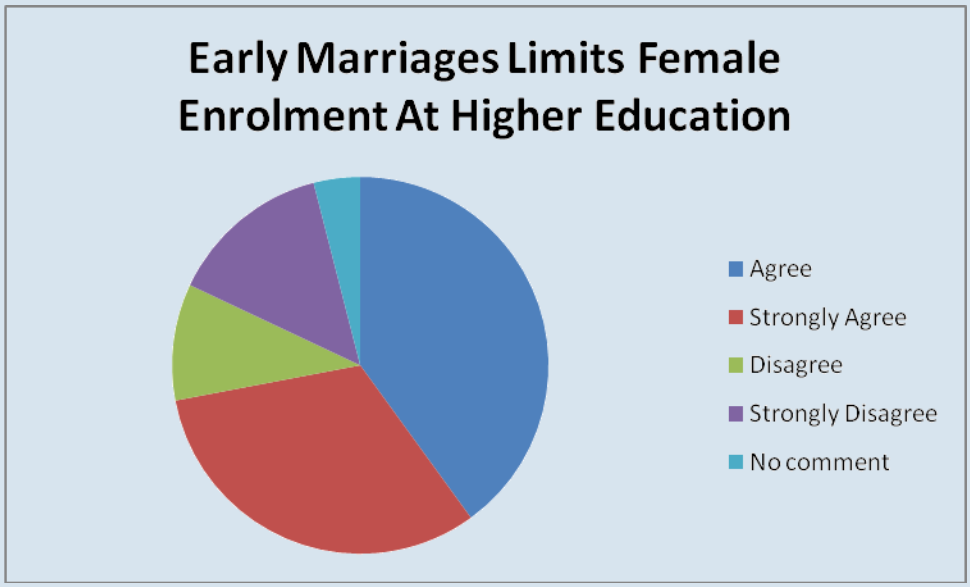


Figure 6: Early Marriages Limits Females' Enrolment at the Higher Education

It was found that 40% of the respondents strongly agree option, while, 32.0% of them are in agreement that early marriage contributed to low rates of females' access to higher education as having more duties (Figure 6). Marriage especially at young age is associated with many responsibilities and other challenges like sickness during pregnancy may deter such female from attending tertiary education may be at time demanding. This means that there need to give special consideration for female, particularly when they got marriage and they want to continue their education.

5.3 Conclusions

The researcher made the following conclusions judging from the findings of the study derived from the main objective of the study which was intended to investigate the factors influencing females' access to higher education in Garowe Puntland, Somalia.

- The current females' students are not happy with the current situation which is characterized by many barriers including; a lack of availability of boarding facilities in the universities, high university costs, transportation means , dress fashion, university cost among others. However, they are willing to learn if the management of local universities changes some things in order to facilitate for gender friendly environments. This could attract more females' to attend higher education.
- This study also reveals that local universities in Puntland are male dominated both administration and teaching that was limited access of female students in higher education. Lack of female teaching staff discourages depicts a bad image on female student as an incapable sex to teach higher level of learning which worsen their already fragile morale.
- The study also revealed socio-economic issues also hamper female from accessing higher education. For to a certain exchange parent marry off their girls before reaching university level and male being given priority to study at expense of girl in most families particularly when fund become limiting.

5.4 Recommendations

In order to minimize the factors affecting females' access to higher education, the researcher suggests the following recommendations.

- The Puntland government, through the Ministry of Education and Higher Education and private sectors should provide support for enlarging and enhancing the local universities through giving land, construction of classrooms and providing valuable items such as chair, tables to increase access and retention of students and particularly females' for the coming two to three years.
- The Puntland diaspora should make fundraisings to support local universities to provide friendly atmosphere that attract both female and male undergraduate students.
- Management of local universities should minimize the costs of the universities by decreasing semester fees and other indirect costs such as photocopy cost in order to increase the rate of

enrolment and get more students who can cover that cost on other side instead of few numbers of students that cannot even cover the running cost of the universities.

- The Puntland government, international NGOs, business community as well as local universities should create and allocate scholarship programs for female' from poor families, orphans, minorities, IDPs and other for every year.
- The Ministry of Education through the Gender Unit should conduct life skills training and encourage married female to continue their education by providing necessary service.
- The Management of the universities as well as students should also support married female by allowing and giving make up classes in the summer time to enable them to attend catch-up classes.

References

Best and Kahn, (1993). *Research in Education: descriptive survey design*.

Kelly, P.G. and Elliott, M. (1982), Orientation towards the study of and Women's Educations in the third world comparative perspectives, state University of New York.

Johnson, Megan Patricia (2011). "*Women's access to higher education in Tanzania: a qualitative study." dissertation, University of Iowa, 2011*. http://ir.uiowa.edu/etd/1234.

UNESCO (2012). World Atlas of Gender Equality in education. France. Available on: *www.uis.**unesco**.org/.../Docu**ment**s/**unesco**-world-atlas-gender-education...*

GTEC Research Journal was created to act as a forum for multidisciplinary perspective involving discussions and reflections on education and life science in Puntland Government of Somalia. The journal appears once a semester. The editorial board invites contributions from scholars on education in eastern Africa and overseas, to give analytical studies and creativity in Puntland that is inclined to education, peace building, social development and environmental protection. The big picture of GTEC Research Journal is to make Puntland a better country in Africa to live in. The journal will always provide book re-views paying attention to those areas that affect Puntland as a country.

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