Effectiveness of Psycho-Education Model in Improving the Quality of Life (QoL) of Women with Comorbid Symptoms of Anxiety and Depressive Disorders in Resource Poor Settings in Laikipia County, Kenya.

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Abstract

This research investigated whether the eclectic psycho-education model was effective in improving the QoL of women with comorbid anxiety and depressive disorders in resource poor settings in Laikipia County in Kenya. Quasi-experimental research design was adopted for this study, with the target population of 484 female members of Conservation Enterprise Groups (CEG) in Laikipia. A sample size of 200 for both the experimental (EG) and control groups (CG) was selected at 80% power and 30% effective size. The tools used for the study included Beck's Anxiety Inventory (BAI) for anxiety, the Beck's Depression Inventory (BDI) for depression and the EUROHIS 8-item- QoL index. Data was analysed using SPSS Version 21.0. The findings of this research show that comorbid depressive and anxiety disorders have a negative impact on people's Quality of Life (QoL). The prevalence of depression was established as 26.7% and that of anxiety as 79.4% amongst the women. The study also showed that if these symptoms were not treated, they degenerated into severe symptoms, as evidenced in the CG, where the psycho-education treatment was not provided. Regression analysis conducted at the end of the study showed that the psycho-education treatment significantly improved comorbid symptoms of anxiety and depression (P<0.005), leading to significant improvements in QoL scores (P<0.005). There is however, need for further research to establish other socio-cultural and environmental factors that contribute to high comorbid anxiety and depressive symptoms, which lead to low QoL among women in resource poor settings in Laikipia.
Key words: quality of life, psycho-education treatment, comorbid anxiety and depressive disorders, resource poor settings.

Introduction and Background

The World Health Organization (WHO, 1999, p. 1) defined QoL as an "individual's perception of their position in life in the context of the culture and value systems in which they live in relation to their goals, expectations, standards and concerns". It is therefore, a broad range and complex concept influenced by a person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment. Quality of Life is used in various contexts, such as international development, healthcare, and politics (Gregory, Johnston, Pratt, Watts, & Sarah, 2009). Sometimes QoL is confused with and sometimes used interchangeably with the standard of living-SoL (Naussbam & Sen, 1993). However, the measures of SoL are usually based on objective aspects such as material wealth, levels of income and education, while those of QoL are based on subjective measures related to people's everyday emotional experiences, such as the frequency and intensity of their experiences related to joy, stress, pain, sadness, anger, and affection. All these are evaluated against a scale (Kahneman, 2010). This shows that when SoL measures are used for QoL, the results are not appropriate.

There are several factors that influence QoL. From a population health perspective, the health status of individuals, subgroups within the population and the population as a whole is the result of complex interplay among various factors (Ryan, 2007). The factors include individual characteristics, the physical environment, including poverty, and socio-economic factors. Ryan (2007) summarized four factors that embrace health and functioning as socio-economic, psychological, spiritual, and family.

Globally, the prevalence of mental disorders is high, with reports of up to 30% in the general population (Kessler, Demler, & Frank, 2005). Globally, in the area of health, QoL is recognised increasingly as an important component in the evaluation of disease processes (Saatcioglu, Yapici, & Cakmak, 2008). A study conducted by Olfson et al. (1996) found that both depression and anxiety were associated with significant impairment in multiple domains of QoL. In this study, when the presence of major depression was controlled, panic disorder remained significantly associated with impairment in work, family, and social functioning. The same study found similar results for depression when controlling for anxiety. Further, Olfson et al. present that patients in the primary health care settings may differ in presentation of symptoms from patients in the psychiatric setting. This could be true of people in communities in resource poor settings addressed by this study.

Another study conducted by Brenes (2007) in the United States, indicated that the association between anxiety and functioning levels stem from the high rates of comorbidity, which anxiety has with depression. Brenes (2007) established this by simultaneously testing the two variables into regression models. Findings of this study showed that this simultaneous inclusion reduced the strength of the associations between both anxiety and depressive symptoms, demonstrating that both had a significant association with the quality of life that was independent of the other (Gretchen, 2007).

Other studies in the United States that simultaneously studied anxiety and depressive symptoms established that the two had differential associations with all the domains of functioning (Nisenson, Pepper, & Schwenk, 1998). However, depressive symptoms had a stronger association with role limitations due to physical and emotional problems, vitality, mental health, and social functioning than did anxiety symptoms.

Other studies conducted in the United States reveal the association between comorbid anxiety and depressive symptoms' severity and functioning. Nisenson et al. (1998) postulated that individuals with mild levels of anxiety or depressive symptoms had worse functioning than individuals who reported no symptoms. Similarly, individuals with moderate to severe symptoms had worse functioning than individuals who reported mild levels of anxiety or depression (Nisenson et al., 1998).

The above findings demonstrate a clear incremental worsening of functioning with increasing severity of comorbid anxiety and depressive symptoms (Brenes, 2007). This is consistent with de Beurs et al. (1999) who found that anxiety symptoms were associated with poorer physical and social functioning. Other studies have found that sub-syndromal symptoms of depression are related to worse physical and emotional functioning (Chopra & Knott, 2005). The current study found the prevalence of 10.8% of common mental health disorders in resource poor settings, which suggest that the QoL for many Kenyans living in resource poor settings is highly compromised. This is affirmed by earlier studies (Jenkins et al., 2012). A study conducted in primary health care settings to estimate the prevalence,

types and comorbidity of the most common mental disorders established that anxiety and major depression are common mental health disorders in Western Kenya (Allion et al., 2014). Another study showed that both anxiety and depressive symptoms affect multiple functioning areas (Khasakhala et al., 2012)

Psycho-education could play a crucial role in rehabilitating, restoring, and treating people with comorbid symptoms of anxiety and depressive disorders, leading to an improvement in their overall well-being (Bartells, 2004). However, research has shown that most psycho-education interventions are not based on psychological assessments and diagnosis in line with the previous DSM-4 criteria (Bartells, 2004). Furthermore, psycho-education interventions that are implemented are based on speculations of the symptoms that appear obvious at initial presentation (Bartells, 2004). In this regard, it appears as though only a few of psycho-education interventions implemented in resource poor settings address the specific psychological and mental health needs of community members. This is because they are not preceded by proper screening or assessments of psychological issues among members of the community.

Although in the past there seemed to have been a general belief that psycho-education interventions were ineffective and passive, a global meta-analysis of literature on psycho-education interventions has showed that the interventions administered for depression and psychological distress (including anxiety) could reduce their symptoms (Donker, Griffiths, Cuijpers, & Christensen, 2009).More so, the quality of psycho-education is critical and needs to be matched to psychological assessments of the needs of the groups in the community that are targeted for psycho-education.

In relation to the previous Millennium Development Goals (MDGs) and the current Social Development Goals (SDGs 2030), Kenya's Vision 2030 strategy document outlines one of its objectives as improving the QoL of Kenyans by the year 2030 (GOK, 2007). However, the measures for QoL that are proposed in the document are those related to objective measures such as income, wealth and education, which are used to measure standard of living (SoL) and not the subjective measures related to QoL. The same is reflected in the other indices that are used to reflect QoL such as the Human Development Index (HDI), the Gender Development Index (GDI) and the recent Youth Development Index (YDI), all of which are measures of SoL. The SDG's 2030 have articulated well-being outcomes for different developmental aspects in SDGs. However, the measures for establishing these outcome indicators are not articulated and fully developed.

The majority of the studies on QoL appear to be contextualized to clinical settings such as hospitals and medical settings or clinics and not community (in relation to poverty) settings (Bartels, 2004). There is therefore, a critical need to include psychological assessment tools, which are rarely integrated into development or poverty related programs. Integration of measures of QoL in poverty interventions and linking the same to assessments of common mental health disorders would help to facilitate a more pragmatic way of measuring QoL in resource poor settings.

This study therefore tested the effectiveness of an eclectic model of psycho-education (that was developed for this study) in treating comorbid symptoms of anxiety and depressive disorders amongst Maasai women living in resource poor settings in Laikipia, Kenya. Findings of this study could contribute to the mental health arena in Kenya by providing a

framework for assessing mental and psychological disorders such as depression and anxiety in resource poor settings. Further, the minimum package of the psycho-education intervention that was developed for treating comorbid symptoms of anxiety and depressive disorders amongst women living in resource poor settings in Kenya could be replicated to other resource poor settings in Africa and globally.

In addition to this, the new knowledge and evidence for integrating quality of life measures in resource poor settings after a poverty reduction intervention that was generated by this study could be useful to policy makers and development practitioners, pursuing collection of indicators and data to inform SDGs. This study was critical because it also provided evidence, which would help to facilitate the integration of mental health into poverty intervention programs in future. The findings could be useful to professionals and policy makers in both the mental health and development fields. This is because it would help to integrate mental health into poverty reduction and development outcomes. This paper has therefore highlighted the findings of the research, which relate to the effectiveness of psycho-education on the comorbid symptoms of anxiety and depression.

Methodology

Quasi-experimental research design was adopted for this study. The population for this study was 484 members of female CEG members in Laikipia North. A sample size of 200 for both the experimental (EG) and control group (CG) was selected at 80% power and 30% effective size. This sample size was determined by the formula below, which has been authenticated to produce reliable results in hypothesis testing, to ethically answer the research questions and derive a reliable conclusion (Chan, 2003). A study conducted in Kenya showed that psycho-education had a 30% effect on subjects with depression and a 29% effect on subjects with anxiety (Muriungi & Ndetei, 2013). In relation to this study, the psycho-education intervention was anticipated to have a successful and clinical relevance of 30% (effect size) translating to 70% of the subjects participating in the study (Chan, 2003). In this regard, for a two-sided test of 5%, (significance) and a standard deviation of two units, the required sample size was determined by the following formula (Chan, 2003).

$$m \text{ (sample size)} = \frac{c * \pi_1(1 - \pi_1) + \pi_2(1 - \pi_2)}{(\pi_1 - \pi_2)^2}$$

Where c (Confidence Interval) = 7.9 for 80% power and π_1 and π_2 are the proportion estimates for the effective size of 30%. Thus from the above illustration, $\pi_1 = 0.3$ (The probability that the psycho-education treatment would have a 30% impact) and $\pi_2 = 0.7$ (That the treatment would effectively cure anxiety and depressive symptoms of at least 70% of the respondents in the study). Therefore the required sample for 80% power is as follows (Chan, 2003):

$$m \text{ (size per group)} = 7.9 * [0.3 (1 - 0.3) + 0.7 (1 - 0.7)]/(0.3-0.7)^2 = 33.18$$

Hence, 33 X 2 = 68 respondents were required for both the control and experimental groups (Chan, 2003). This sample size was appropriate because of the treatment intervention

was administered within the subjects (respondents) in the experimental group, which in factorial research design, is found to be efficient (Shughnessy & Zechmeister, 1990). According to Shaughnessy and Zechmeister (1990), one reason to adopt a within subjects research design is for convenience or efficiency. However, to avoid attrition and low response rates, the researcher marked up the required sample size for both the experimental and control groups to 200 respondents, which translated to 100 respondents for each arm (100 for the experimental and 100 for the control group) of the study.

Standardised tools were used to collect data on anxiety, depression and Quality of Life (QoL). The tools included Beck's Anxiety Inventory (BAI) for anxiety and the Beck's Depression Inventory (BDI) for depression and the EUROHIS 8-item- QoL index to measure Quality of Life (QoL) levels. The inclusion criteria for those selected to participate in the study included those who tested positive for mild to moderate scores for anxiety (10 to 29), as tested by BAI and those meeting mild to moderate scores for depression (14-29) as tested by BDI. Those with minimal and severe depression (14 >x>29) and those with minimal and severe anxiety scores (10 >x >29) were not eligible to participate in the study. However, as part of the ethical requirement, the respondents who presented with severe depression and anxiety symptoms were referred to the Nanyuki Teaching and Referral Hospital for clinical treatment. This inclusion and exclusion criteria was also used to identify participants for the control group as well. The ethical principle for referring for help was also used for participants in the control group found with severe depression and anxiety.

A hundred and seven (107) female participants who met the criteria for minimal to moderate depressive and anxiety symptoms were recruited to participate in the treatment intervention for the experimental group (EG) and 101 women were recruited to participate in the control group (CG). These respondents were either active members or affiliated to CEGs. The psycho-education treatment was only administered to the EG. However, it was wait listed for administration to the CG at the end of the study. Data was analysed and significance tests conducted using SPSS Version 21.0 as presented in tables and graphs.

Results

At baseline, 107 respondents participated in the experimental group, while 101 respondents participated in the CG. There was a minimal attrition rate of 1.9% (2) in the Experimental Group (EG) and none in the Control Group (CG).

Regression analyses conducted showed that there were no significant variations in the socio demographic factors for the EG and CG sites and the respondents were found to be similar in age, being in polygamous marriage, having children and employment status (P>0.05). However, there were no significant variations in literacy levels in the CG (P=0.000), as well as marital status amongst the women in the CG (P=0.047). The variation noted in employment status (P= 0.079) could be attributed to the fact that the Twala CEG was located closer to a town centre at the junction of a road that leads to two major towns in Laikipia namely, Nanyuki and Doldol. This could imply that that the respondents in the EG were more likely to find more opportunities to earn an income than their counterparts in the CG who were further away from accessing similar opportunities. The findings of this study showed that anxiety was significantly associated with younger respondents (P=0.004) in

Laikipia County. In the narrative sessions, women attributed this to the pressures and demands of marriage and care-giving responsibilities required of them, by their husbands and in some instances co-wives. They were left with very little time to engage in meaningful employment and in most cases their husbands would not allow them to be away from their homes for extended periods. These findings are confirmed by other studies done in the US, which indicated that young women are more likely to suffer from anxiety (ADAA, 2005; Greenberg et al., 1999).

Table 1: Socio-Demographic Variations of EG and CG at Baseline

Variable	Total (N=206)		Experimental (N=105)		Control (N=101)		χ^2 value	df	P value
	n	%	n	%	n	%			
Age category									
18-31 years	101	48.6	54	50.5	47	46.5			
32-45 years	62	29.8	32	29.9	30	29.7	5.165	7	.645
46 years and above	45	21.6	21	19.6	24	23.7			
Education level									
None	147	71.4	62	57.9	85	84.2			
Primary school	41	19.9	31	29.0	11	10.9	19.558	3	.000
Post Primary Education	18	8.7	14	13	5	5			
Marital status									
Single	29	13.9	22	20.6	7	6.9			
Married	139	66.8	58	54.2	81	80.2	23.394	5	.047
Separated/Divorced	22	10.6	18	16.8	4	4.0			
Widowed	18	8.7	9	8.4	9	8.9			
In polygamous marriage									
Yes	56	27.2	28	26.1	29	28.7	1.326	1	.372
No	150	72.8	79	73.8	72	71.3			
Has children									
Yes	198	96.1	105	98.1	95	94.1	2.246[a]	1	.135
No	8	3.9	2	1.9	6	5.9			
Employment status									
Yes	52	25.2	33	30.8	20	19.8	3.108[a]	1	.079
No	154	74.8	74	69.2	81	80.2			
Number of hospital visits per month									
None	120	60.6	53	54.6	67	66.3			
Once	41	20.7	26	26.8	15	14.9	5.506[a]	1	.057
Twice	24	12.1	12	12.4	12	11.9			
More than twice	13	6.6	6	6.2	7	6.9			

Socio-Demographic Factors Associated with QoL

The study found that poor QoL was significantly associated with low levels of education (P=0.005). This could be due to lack of access to socio-economic opportunities

available to respondents in this community to earn an income. This finding is in line with a global study conducted by the World Bank (2011), which reported that women with low literacy levels had relatively poor QoL. The study also established that poor QoL was associated with lack of employment (p-value=0.007), which is supported by Rojas (2007), which indicated that people with low income also reported being poor QoL.

QoL was also found to be significantly influenced by age (P=0.047) and that a unit increase in age would lead to a 0.074 decrease in QoL. This means that if the women in Laikipia were older by one year, their QoL would reduce by 0.074. It has also been shown that as people grow older, their QoL reduces (WHO, 2011). Other studies conducted in South Africa (Xavier et al., 2010) and in Kenya (Kyobutungi et al., 2010), have also attested to the fact that QoL decreases as a person grows older.

Table 2: Correlation between Socio-Demographic Factors and QoL

Variable	Poor		Neither poor nor good		Good		Very Good		χ^2 value	df	P value
	n	%	n	%	n	%	n	%			
Age category											
18-31 years	14	6.7	72	34.6	15	7.2	0	0.0			
32-45 years	8	3.8	42	20.2	11	5.3	1	0.5	19.559	9	.005
46 years and above	17	8.2	24	11.5	4	1.9	0	0			
Education level											
None	17	8.6	72	36.4	48	24.2	5	2.5			
Primary school	5	2.5	15	7.6	15	7.6	2	1.0	17.529	9	.005
Post primary education	2	1	3	1.5	9	4.5	4	2			
Marital status											
Single	8	3.8	17	8.2	4	1.9	0	0.0			
Married	24	11.5	93	44.7	21	10.1	1	0.5	2.485	9	.976
Separated/Divorced	4	1.9	15	7.2	3	1.4	0	0.0			
Widowed	3	1.4	13	6.3	2	1.0	0	0.0			
In polygamous marriage											
Yes	4	2.0	31	15.7	16	8.1	8	4.0	6.822	6	.538
No	20	10.1	59	29.8	56	28.3	0	0.0			
Has children											
Yes	22	11.1	86	43.4	70	35.4	11	5.6	1.928	3	.181
No	2	1.0	4	2.0	2	1.0	0	0.0			
Employment status											
Yes	2	1.0	20	10.1	22	11.1	5	2.5	7.590	1	.007
No	22	11.1	70	35.4	50	25.3	6	3.0			

Number of hospital visits per month	n	%	n	%	n	%	n	%			
None	13	6.6	50	25.3	49	24.7	8	4.0			
Once	3	1.5	21	10.6	15	7.6	2	1.0	15.61	8	.155
Twice	5	2.5	13	6.6	6	3.0	0	0.0	4[a]		
More than Twice	3	1.5	6	3	2	1	1	0.5			

Discussion

This study established that there was an occurrence of comorbid anxiety and depressive symptoms. At baseline, 12% of the women in the EG had comorbid symptoms of mild anxiety and depression together, as compared to 23% in the CG. However, after the second and final intervention, comorbid symptoms of anxiety had reduced from 12% to 0% in the EG, but rose from 12% to 17% in the CG. The study results indicated that untreated comorbid symptoms of anxiety and depressive disorders deteriorated in the CG, leading to an incremental worsening in their QoL levels. This finding is similar to those of Brenes (2007) and Olfson et al. (1996) in the United States and (Ndetei et al., 2011) in Kenya, which indicated that untreated anxiety and depressive symptoms degenerated into worse psychopathologies. In this regard, it is therefore critical that as a preventive measure, mechanisms are sought through the existing health frameworks to have methods of identifying and treating anxiety and depressive disorders among women in resource poor settings, before they deteriorate.

Table 3: Comorbid Symptoms of Anxiety and Depression for EG and CG

Baseline				Midline				Endline			
N=107		N=101		N=105		N=101		N=105		N=101	
EG		CG		EG		CG		EG		CG	
n	%	n	%	n	%	n	%	n	%	n	%
12	12	23	23	0	0	12	12	0	0	17	17
										5*	5
				3*						9**	9
										5***	5

*severe anxiety and moderate depression, ** moderate anxiety and severe depression, ***severe anxiety and severe depression

The study revealed that there was a significant negative relationship between comorbid symptoms of depression and anxiety symptoms and QoL (P<0.005). This indicates that the QoL levels of women in resource poor settings reduced when the comorbid symptoms of anxiety and depression increased. These findings are similar to other studies done in Canada (Sareen et al., 2006), USA (Brenes, 2007), Niseson, Pepper & Schwenk (1995) and Kenya (Ndetei et al., 2011), which show that increase in anxiety and depressive symptoms lead to poor social, occupational and social functioning domains of QoL. These findings point to the need for systematic and targeted ways for identifying, assessing and

treating depression, among women in resource poor settings such as those found in Laikipia County in Kenya to improve their QoL.

Table 4: Regression Analysis of Comorbid Symptoms of Anxiety and Depression at Baseline for EG

		Depression scores			Total
		Minimal depression	Mild depression	Moderate depression	
	Minimal anxiety	0	0	1	1
Anxiety scores	Mild anxiety	14	5	2	21
	Moderate anxiety	53	19	12	85
Total		67	24	15	107

Bi-variate analysis tests that were conducted showed that of the women who tested positive for comorbid symptoms of anxiety and depression, at baseline, 19 had both mild depression and moderate anxiety while 12 had both moderate depression and moderate anxiety. Further, two of the 107 had moderate depression and mild anxiety while five had mild depression and mild anxiety.

Table 5: Regression Analysis of Comorbid Symptoms of Anxiety and Depression at Baseline for EG

		Depression scores			Total
		Minimal depression	Mild depression	Moderate depression	
	Minimal anxiety	0	0	1	1
Anxiety scores	Mild anxiety	14	5	2	21
	Moderate anxiety	53	19	12	85
Total		67	24	15	107

However, after the final psycho-education treatment that was administered for the EG, the regression analysis tests conducted on overall depression and anxiety scores indicated that 93 respondents recorded minimal depression and anxiety. Further, only two out of the 95 had mild depression and minimal anxiety while none had either mild depression and mild anxiety or even moderate anxiety and moderate depression at the end of the psycho-education treatment. These findings indicated that the psycho-education treatment was effective in treating comorbid symptoms of anxiety and depression in the EG.

Table 6: Regression Analysis of Comorbid Symptoms of Anxiety and Depression at Intervention/ Treatment Two for EG

| | | Overall Depression scores | | Total |
		Mild depression	Mild depression	
Overall Anxiety scores	Minimal anxiety	93	2	95
	Mild anxiety	2	0	2
	Total	95	2	97

Findings of the study reveal that after the first and the second psycho-education treatments there was a notable reduction in prevalence of comorbid symptoms of mild and moderate anxiety and depression in EG. The finding indicated that the psycho-education intervention was effective in treating comorbid symptoms of anxiety and depression. The findings are similar are similar to those found in some other parts of Africa (Kaaya et al., Murungi & Ndetei., Wu & Li, 2013), which found that psycho-education interventions significantly reduced symptoms of anxiety ($P<0.05$) and depression ($P<0.05$) among similar groups.

A time series analysis using QoL mean scores for both EG and CG and Chi-square tests found that the psycho-education treatment improved QoL from neither good nor poor at baseline to good after the first psycho-education treatment and eventually to very good after the second and final psychoeducation treatment in the EG. This finding is similar to other findings conducted in the USA by Morse (2004), Christensen et al. (2004) and in Kenya by Muriungi and Ndetei (2013), which found that psycho-education was effective in treating, psychopathologies, including alcohol and substance abuse. It was therefore concluded that the psycho-education model adopted for the parts this study was effective in improving QoL of the women.

Table 7: QoL Domain Scores for both EG and CG at Baseline, after Treatments One and Two

| QoL Domains | Baseline | | Midline | | Endline | |
	EG Mean	CG Mean	EG Mean	CG Mean	EG Mean	CG Mean
Self-Rating for QOL	3.00	3.25	3.79	3.32	4.26	2.84
Satisfaction with health status	3.18	3.18	3.69	3.34	4.16	2.71
Enough energy for everyday life	2.42	2.34	3.39	2.74	3.76	2.67
Satisfaction to perform daily activities	2.26	2.34	3.51	2.28	4.03	2.49
Satisfaction with self	2.85	2.64	3.85	2.63	4.87	2.52
Satisfaction with personal relationships	2.69	2.73	4.06	2.49	4.75	2.50
Income satisfies all needs	1.27	2.02	1.71	2.02	2.09	2.25

Satisfaction with living place	2.40	2.84	3.51	2.72	4.35	2.71
Quality of life scores	2.94	2.99	3.74	3.10	4.35	2.80

Table 8: Time Series Testing the Overall Means of Anxiety and Depression after Psycho-Education Treatment

	Baseline		Midline		Endline	
	EG	CG	EG	CG	EG	CG
Anxiety scores	2.79	2.52	1.48	2.69	1.02	3.07
Depression scores	1.50	1.74	1.00	1.50	1.02	2.22

The study confirmed that the psycho-education model adopted for this study was an effective treatment for comorbid symptoms of anxiety and depression. This finding was similar to another global meta-analysis that established that psycho-education interventions had an effect on improving anxiety and depressive symptoms (Tara et al., 2009). Therefore, the model of psycho-education that was developed and applied as the treatment for this study, could in future be adopted and replicated to treat anxiety and depressive symptoms, among women in resource poor settings.

Narrative discussions were conducted during the first and second psycho-education interventions. The women could identify with and define symptoms of anxiety in their local language as *Uraureushio* and those for depression as *Aisinanu*. This made it possible for them to narrate how they experienced the symptoms for the two disorders and how they affected their QoL.

The study established that other socio-cultural and environmental factors were crucial in determining the QoL. During the discussions, the women said that having co-wives, more children, improved access to water resources (minimized conflict between humans and wildlife) and reduced gender based violence from their spouses at home, reduced their anxiety and depressive levels. It also made them happier, leading to a better QoL. These qualitative data collaborated and supported the regression analysis tests, whose findings showed that socio-demographic factors accounted for less than 1% of comorbid symptoms of depression and anxiety and only 1.5% of poor QoL among the women in Laikipia County, Kenya.

There is need therefore, for future research to study other factors (socio-cultural and environmental) that could influence or cause comorbid anxiety and depressive symptoms, leading to poor QoL. This would also help to develop evidence based homegrown solutions for identifying, assessing and treating the disorders. Further, such research would also help to develop evidence based indicators or indices for measuring QoL of people and particularly women living in resource poor settings, such as those in Laikipia County in Kenya.

Conclusion

This study found that both anxiety and depressive symptoms are prevalent among the *Masaai* women in resource poor settings in Laikipia. This creates a need to integrate mental health services in primary healthcare settings. There is need for these services to be linked to resource poor settings to address comorbid anxiety and depression among women. The study also established a high prevalence of comorbid symptoms of depression and anxiety, which worsen if untreated, leading to an incremental worsening on QoL, and weak but significant negative relationships between anxiety and QoL, as well as between depression and QoL. Further to this, the study established that the psycho-education intervention significantly reduced anxiety and depressive symptoms.

The study established that there are other socio-cultural factors such as being in a polygamous relationship, having more children, reduced human-wildlife conflict and reduced gender based violence, which were cited by the women as critical determinants of anxiety and depressive symptoms, as well as QoL. The study also found that the psycho-education treatments reduced symptoms of anxiety and depression amongst the women in EG, leading to significant improvements in their overall QoL.

Based on the above research findings, the following recommendations are made:

The national and county governments could adopt the globally ratified tools such as the EUROHIS-QoL-8-item index or the WHO QOL BREF questionnaire, to measure QoL among women in resource poor settings before and after a poverty reduction intervention. This would help to assess QoL in resource poor settings and would help put Kenya on the map for QoL indices globally. It would also help to assess changes in QoL of people and particularly women living in resource poor settings such as those in Laikipia.

Global, regional, national and county institutions would adopt, improve on or implement the psycho-education model used for this study to sensitize women and men in resource poor settings, on comorbid depressive and anxiety symptoms, how they manifest and how they can be treated through a medical and cost-effective community oriented psycho-education approach.

For further research, there is a need to develop QoL indices that are contextualized to measuring QoL of women living in resource poor settings in Africa.

An investigation into the other socio-economic and cultural factors that could cause comorbid depressive, anxiety symptoms and QoL among young women in resource poor settings could also be done. These include factors such as being in a polygamous relationship, sexual and gender based violence (SGBV) and having more children. This could help in understanding the socio-cultural factors that contribute to increased risk and incidences of anxiety and depressive disorders among women in resource poor settings.   .

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