



Prevalence and Predictors of Psychopathological Symptoms among Inmates in Dilla Correction Center, SNNPR, Ethiopia

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Abstract

The study examined the prevalence rate of psychopathological symptoms among prison populations, and their link to gender, age, educational status, term of sentence, crime type and district administration. Totally, 420 participants were selected through multi-stage probability sampling techniques followed by student's *t*-test and logistic regressions were employed for data analysis. It was found that 48% (95%CI = -0.08, 0.05) of inmates had been experiencing psychopathological symptoms, which were not significantly different ($\alpha=0.05$, $p = 0.65$). Furthermore, a set of predictors could reliably distinguish between inmates with and without psychopathological symptoms ($\chi^2 = 145.913$, $p < 0.001$, $df = 5$). Thus, except for gender and age, other variables (i.e., educational status, crime type, term of sentences and district administration) were accurate in terms of predicting psychopathological symptoms. On this basis, inmates need greater assistance to become functioning members of society prior and/or later to incarcerations.

Keywords: Psychopathology, Symptoms, Predictors, Inmates.

Introduction

Mental and behavioral disorders account for a complex network to involve into offensive actions. Be it anxiety, substance abuse, personality disorders (i.e., psychopathic personality), schizophrenia, mood disorders, and/or co-morbid cases. Several empirical evidences (e.g., Mateyoke-Scri, Webster, Hiller, Staton, & Eukefeld, 2003; Kinner, Dietze, Gouillou, & Alati, 2012) have shown that persons who pledge into crime more likely reported frequent medical history. However, over the past decade, reports have presented through scientific analysis on the presence of offensive actions, and mental illness among inmates, but there are scanty proofs on the growing nature of crimes and the status of psychopathological symptoms among them. Scholars indicate that there are diverse diagnostic estimates of persons with mental illness in jails (Fellner, 2006). For example, the findings showed that in America, 10 - 15 % (Oxelson, 2009), Great Britain over 90%

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(Birmingham, 2003) and South Africa 55.4% of inmates found to have some or other kind of mental illness (Naiddoo, & Mkize, 2012).

Similar finding (e.g., Hammersley, Forsyth, Morrison, & Davis, 1989) disclosed the relationship between substance abuse and offensive actions as to cocaine or opioids addictions are allied to criminal involvement, and risky and heavy drinking (e.g., Kinner et al., 2012) and illegal drug users (e.g., Quinn & Sneed, 2008; Wunsch, Nakamoto, Goswami, & Schnoll, 2007). These further showed that substance abuse is a deviant behavior that usually co-occurs with other psychiatric illness or crime tendencies among families (Nagalakshmi, Kasarabada, Anglin, Stark, & Paredes, 2000). Another study showed that offenders with a history of victimization (e.g., criminals who already were victim of sexual assault) were more likely to commit assaultive violence than offenders never victimized (Silver, Felson, & Vaneseltine, 2008). Furthermore, persons charged with a serious offence such as homicide are frequently found to be suffering from severe depressive disorder at the time of breaching violence (Prins, 2005).

As can be understood from the above discussion points, crime, incarceration and mental disorders are directly related. That is, crime fallouts to incarceration, while incarceration induces behavioral disorders. For example, in South Africa, over 70% of all offenders are currently incarcerated because of violent crimes and possibly they experience psychosocial problems (Loots, & Louw, 2011). The epidemiological evidence drained from other studies show that prisoners have experienced and continue to experience worse health problems than the general population (De Viggiani, 2006; Fazel, & Baillargeon, 2010; Ogloff, Tye, Blaher, & Thomas, 2011; James, & Glaze, 2006; Kinsler, & Saxman, 2007). Moreover, studies show the presence of several associations between psychological symptoms (i.e., anxiety, insomnia and substance abuse) with physical health problems (i.e., skin, respiratory and circulatory) among inmates (Eytan, Haller, Wolff, Cerutti, Sebo, Bertrand & Niveau, 2010). The experiences of Eldoret correction center in Kenya help to understand African reality as well; that means, substance abuse was predominant (66.1%) followed by alcohol (65.1%), cigarette (32.7%), cannabis (21%), amphetamines (9.4%), volatile inhalants (9.1%), sedatives (3.8%), tranquilizers (2.3%), cocaine (2.3%), and heroine (1.3%) (Kinyanjui, & Atwoli, 2013). Supplementary evidences (e.g., Houser, Belenko, & Brennan, 2012; Solomon, Campero, Llamas, & Sweetser, 2012; Oxelson, 2009; Kubiak, Boyd, Slayden, & Young, 2005) show that the risk of misconduct was higher for inmates with mental illness shared with a drug dependence disorder than for inmates with particular disorders.

In this study, an attempt has been made to see whether the rate of psychopathological symptoms show difference in terms of gender, age, educational status, term of sentence, and the weight and nature of crime. This is because scholars have indicated that the impact of life term sentence can easily be observed from the dependence on institutional structure and contingencies, hyper-vigilance, interpersonal distrust and suspicion, emotional over-control, alienation or psychological distancing, incorporating of exploitative norms of prison culture, diminished sense of self-worth and personal value, and post-traumatic stress reactions (Haney, 2002). In other studies considering age and educational level, younger and less educated inmates tend to more frequently experience psychopathological symptoms than adult inmates (Silver et al., 2008; Kinyanjui, & Atwoli, 2013; Imai & Krishna, 2004). From crime weight perspective, offenders with serious crimes like murder and subsequently waiting for death row, reported high psychiatric illnesses (Cunningham & Vigen, 2002). Gender comparison shows that female inmates

exhibited severe psychopathological disorders than male offenders (Johanson & Debrzanska, 2005). Thus, on the basis of the above discussions, the study aimed to achieve the following objectives:

- To examine the prevalence rate of psychopathological symptoms among inmates in Dilla correction center, and;
- To find out whether gender, age, district, educational status, term of sentence and crime type predict psychopathological symptoms.

Method

Participants and sampling techniques

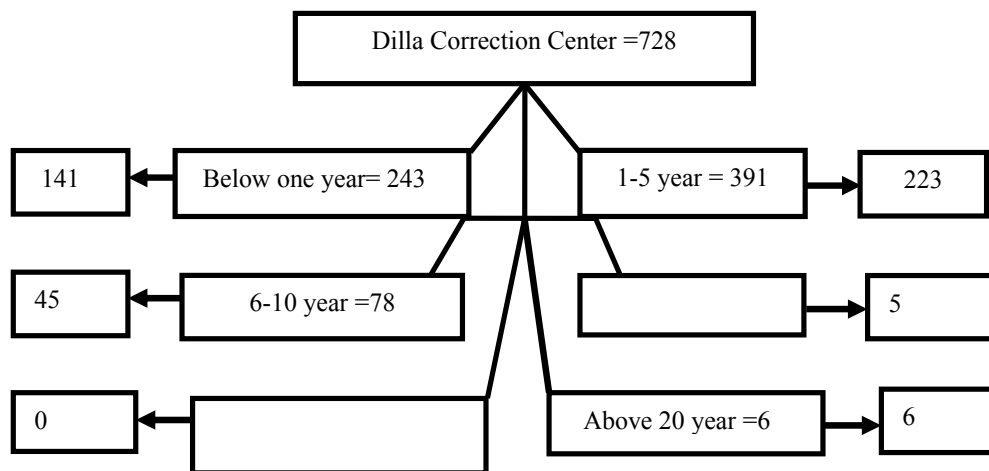
In the study, 420 randomly selected inmates (i.e., 384 males and 36 females) have participated with the exclusion of two participants for medical case. The study population included people who were sentenced a minimum of a month to life term sentence. The total inmates' strength of study site was 727 (i.e., 667 male and 60 females). The figure was computed based on the formula proposed for single population proportion (Hollander, Wolfe, & Chicken, 1999). The value of "p" was taken as 50% due to the absence of previous findings indicating the prevalence rate of psychopathological symptoms. The Z-value of 1.96 was used at 95% Confidence Interval with margin error was 5%. Accordingly, the sample size (n) of the study was calculated as follows,

Figure 1. Sample size determination

$$n = \frac{Z^2 p (1-p)}{d^2} = \frac{(1.96)^2 \times 0.50 \times (0.50)}{(0.05)^2} = 384$$

Where "n"= sample size, "p"=proportion, and "d"= margin of error. Also, to manage response set, 10% added to the sample size (i.e., 38 inmates); then, the total sample size became 422. Multi-stage sampling (i.e., stratified, systematic and simple random sampling techniques) was employed to randomize the sample selection. The proportion of the sample (p) = n/N where, n = sample size and N = population size, P = n/N = 422/727=0.58. To refer, 0.58 proportions were included from each stratum, bearing in mind term of sentence as a criterion to owe strata. Further elaboration is denoting population size and the number of proportion drawn from each stratum outlined in the following figure.

Figure - 2: Sampling frame, Research design and instrumentation



A cross - sectional descriptive survey design has been employed through operating questionnaire as data gathering instrument. CORE-OM psychopathological questionnaire (Barkham, Gilbert, Connell, Marshall, & Twigg, 2005) was modified and utilized because it has been widely used in clinical practice to assess psychological problems. The total number of the items was 29 (modified statements from 34 CORE -OM survey items). This item includes testing of illicit feelings and behaviors related to mental and behavior distress. In other words, the respondents were asked to check how often they feel or behave that way over the previous week on a five-point scale (i.e., 1=never, 2=twice or once in six month, 3=twice or once in a month, 4=twice or once in a week or 5=daily). Sets of items within the questionnaire relate to overall “subjective wellbeing” (4 items), psychological “problems” (12 items), daily “functioning” (12 items) and “risk” to self and others (6 items).

CORE-OM items have been adapted in order to contextualize the items with the norm group characteristics. Studies show that type, language, format and magnitude of research problems likely to vary across social and cultural background of individuals (Harkness, 2010). Similarly, measures of such variables essentially vary either developing new measures or adapting existing instruments, which help to address issues of reliability and validity (Rattray & Jones, 2007; Tavakol, & Dennick, 2011). Two procedures were performed to generate quality and appropriate items through the initial pilot test with 100 inmates. First, qualitative evaluation (i.e., triangulation) was made between three psychologists assessing the contents, organizations and languages. Second, quantitative analysis was made through, (1) reliability analysis to ensure how far a group of items measures the construct properly or to know about the extent to which the group of items did have internal consistency (2) item analysis to find out how far each item was qualified to measure the construct in similar way to the rest of the items (Rattray, & Jones, 2007). Reliability analysis was ensured through Chronbach alpha (Tavakol, & Dennick, 2011), while item analysis was computed through item-to-total analysis. From the reliability analysis, Chronbach alpha came to be $\alpha = 0.76$, which is significantly reliable. From item analysis, the items with correlation coefficient, $r = 0.4$ and above were accepted automatically; however, items with correlation coefficient between $r = 0.2$ and 0.4 were

improved qualitatively. The remaining items, five items, with correlation coefficient $r \leq 0.2$ were excluded from the collection of CORE-OM questionnaire. Finally, through these procedures 29 items were generated and included in the final survey. A high score labeled as the presence of behavioral distress: an individual who scored greater or equal to the average considered as “unwell”, while below the average is denoted as “well”.

Method of data analysis

Single sample independent student's t-test helped to compare the two means (i.e., proportions). The first proportion was theoretically set level of mental and behavioral distresses, while the other one was the observed proportion of psychopathological symptoms among the prisoners. Moreover, Logistic Regression Model was used to test the dependent variable (psychopathological symptoms) against five independent categorical variables (i.e., gender, age, educational level, district, crime type and term of sentence). Moreover, another continuous variable (i.e., age) was involved to set inmates with psychopathological symptoms. Age has been reflected to validate, if psychopathological symptoms vary across the maturity level of prisoners, while sex was instrumented to cross – check the level of psychopathological symptoms among male and female prisoners. The other variable, educational level, similar to the age of the participant, has been painstaking to underpin the level of psychopathological symptoms with changing age variable. Complementing, districts were taken into account because it was supposed that those variables might affect the prisoner's access and availability of information in the prison to fight against psychosocial distresses. Also, it has supported to check whether the level of psychopathological symptoms differ across geographic and social contexts. Logistic regression was preferred since it was inherently appropriate for the reason that the dependent variable has a dichotomy (i.e., two categories) and suited for epidemiological studies. Further assumptions that, for example, suited for the non-linear relationship between the dependent and independent variables were also considered.

Ethical issue

Ethical issue had been addressed through the consent ensured from the research participants through a deal stimulated by a psychologist working in that correction center. Thus, all of the participants were volunteers who were informed fully of the requirements of the study.

Results

1. Participants' background

Three subject variables (i.e., age, educational status and district / the area where prisoners came from) as background information of the participants' were presented in the following Table. It has huge implications to design implementation strategies and policy framework to prevent and rehabilitate the most vulnerable group of individuals towards crime and crime related actions.

Table1. Participants' background

Age	N	%	Educational status	N	%	District	N	%
15-20	133	31.67	Illiterate	27	6.43	Gedeo	296	70.48
21-30	187	44.52	Grade 1-6	194	46.19	Sidama	18	4.29
31-40	61	14.52	Grade 7 - 8	32	7.63	Segen	83	19.76
41-59	34	8.10	Grade 9 -10	109	25.95	Oromiya	14	3.33
> 60	5	1.19	Grade 11-12	29	6.90	Wolaita	9	2.14
			> grade 12	29	6.90			
Total	420	100		420	100		420	100

As indicated in Table 1 above, the age of inmates mostly was under 21-30 constituting 44.52% followed by 15-20 of 31.67%. This shows that large proportion of the participants was adolescents and in some cases came from early and middle adulthood stages. Concerning the educational level, 194 (i.e., 46.19%), were from grade 1-6 (i.e., primary school) followed by grade 9 and 10 (i.e., high school). The rest fairly came from grade 7 and 8, grade 11 and 12, above grade 12, and were illiterate. This finding complements the findings cross-checked by age distribution. That is, if the majority of inmates were grade 1-6 followed by grade 9 and 10, which means, that they were youngsters and adolescents who were continuously spoiled into criminal behaviors. In terms of district, the greater number of inmates were from Gedeo Zone (i.e., Kochreworeda, Yirga Chefe, Bule and so forth) which was accounted, 296 (i.e., 70.48%) followed by Segenarea (i.e., Amaro, Burji, Konso and Derashe) inputting 83 (i.e., 19.76%).

2. Prevalence of psychopathological symptoms

As indicated in the introduction section, one of the objectives of the study was to examine the prevalence of psychopathological symptoms among inmates with implicit hypothesis, 50% of inmates in Dilla correction center experience psychopathological symptoms. To that end, relevant data were collected and data analysis was done through rigorous quantitative approaches. Data dichotomization helped to ensure separating inmates with and without psychopathological symptoms. Coding “1” for the presence of psychopathological symptoms, while “0” for the absence of psychopathological symptoms.

Table 2. Prevalence rate of psychopathological symptoms

N	Mean	SD	SE	Test Value = 0.50					
420	0.48	0.50	0.033	95%CI					
				t	df	Sig.	Mean (-)	Lower	Upper
				-0.458	419	0.65	-0.015	-0.08	0.05

In Table 2, the proportion of the prisoners who experienced psychopathological symptoms has sample mean 0.48 on the p-value for the test 0.65. As can be seen from the table, the p-value 0.65, was greater than the significance level, $\alpha = 0.05$. Hence, there was no evidence to conclude as statistically significant difference between the theoretical point of psychopathological symptoms and the observed value at 5% significance level; therefore, the null hypothesis (i.e., 50% of inmates in Dilla correction center experience psychopathological symptoms) was accepted. In plain understanding, there was evidence to conclude as the rate of psychopathological symptoms was 48%, 95%CI (-0.08, 0.05) which was not significantly differently from the hypothesized proportion of psychopathological symptoms (50%).

3. Predictors of psychopathological symptoms

Six variables (gender, age, educational status, crime type, term of sentence and district) were considered to predict the effect on the psychopathological symptoms among the participants. Logistic regression helped to scrutinize the effect of these variables and the results were presented in the subsequent Tables; that is, Table-3, Model fit test and Table-4, Variables in the Equation.

Table 3. Omnibus Tests of Model Coefficients

	Chi-square	df	Sig.
Step	145.913	5	.000
Block	145.913	5	.000
Model	145.913	5	.000

Table 3 shows that a test of the full model against a constant, six subject variables was statistically significant. That was, representing the predictors as a set, reliably distinguished between prisoners who experienced psychopathological symptoms and did not experience psychopathological symptoms ($\chi^2 = 145.913$, $p < 0.001$ with $df = 5$). Hence, the null hypothesis, “the chi-square model is a correct fitting model” was rejected, yet the alternate hypothesis, “the chi-square model is not a correct fitting model” (i.e., predictors have a significant effect) was accepted with 5 degrees of freedom, a value of 145.913 and a probability of $p < 0.001$. Thus, the indication is that the model has a poor fit, as the constant indicating that the predictors had a significant effect. So, to look closely at the predictors, (Table 4) below is helpful to decide which one of the predictors were statistically significant.

Table 4 describes the amount of each variable contributed to the success of the model (Wald), the significance level and the odd ratio. It was found that all of the variables impacted changes in the psychopathological level of the inmates except gender and age. That means, educational status: illiterate (OR = 1.849, CI95 = 1.266, 2.699), Grade 1-6 (OR = 2.044, CI95 = 1.416, 2.951), and Grade 11-12 (OR = 0.442, CI95 = 0.297, 0.658). Concerning crime type, almost all kinds of crime type generated psychopathological symptoms. To mean, murder (OR = 0.280, CI95 = 0.211, 0.371), theft and robbery (OR = 0.634, CI95 = 0.501, 0.801), physical attack (OR = 0.367, CI95 = 0.278, 0.484) and emotional attack (OR = 0.737, CI95 = 0.547, 0.994). Regarding term of sentence, prisoners who have been sentenced for more than 10 years have reported relatively more psychopathological symptoms (OR = 9.261, CI95 = 3.031,

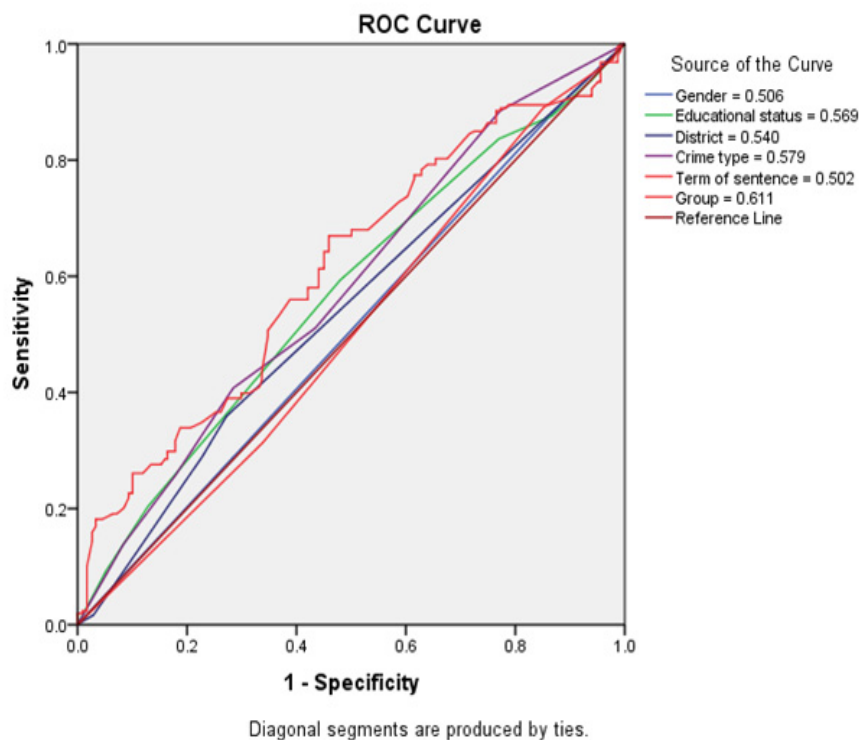
28,300). District as predictor variable, inmates from Sidama area likely experienced psychopathological symptoms (OR = 2.416, CI95 = 1.177, 4. 960), and from Segen area (OR = 2.115, CI95 = 1.072, 4. 175). Further illustration was made through representing the area covered by each predictor variable on ROC curve.

Table 4. Variables in the Equation

	B	Wald	p	Odd Ratio	95% C.I.	
					Lower	Upper
Gender	-.063	.271	.603	.939	.741	1.190
Age	.002	.504	.478	1.002	.996	1.009
Education						
Illiterate	.615	10.133	.001***	1.849	1.266	2.699
Grade 1-6	.715	14.575	.000***	2.044	1.416	2.951
Grade 7-8	.166	1.210	.271	1.180	.879	1.585
Grade 9-10	-.115	.551	.458	.891	.657	1.208
Grade 11-12	-.816	16.138	.000***	.442	.297	.658
> grade 12	-.214	1.241	.265	.808	.554	1.176
Crime type						
Murder	-1.274	78.091	.000***	.280	.211	.371
Theft & robbery	-.456	14.586	.000***	.634	.501	.801
Physical attack	-1.002	50.253	.000***	.367	.278	.484
Sexual assault	-.248	3.050	.081	.780	.591	1.031
Emotional attack	-.305	4.003	.045*	.737	.547	.994
Term to sentence						
< 1 year	.546	1.296	.255	1.726	.675	4.413
1-5 years	.782	2.703	.100	2.186	.860	5.553
6-10 years	.318	.430	.512	1.375	.531	3.558
> 10 years						
District						
Gedeo	.305	.796	.372	1.356	.695	2.647
Sidama	.882	5.778	.016*	2.416	1.177	4.960
Segen	.749	4.663	.031*	2.115	1.072	4.175
Oromiya	.748	3.813	.051	2.112	.997	4.474
Wolaita	-.227	.249	.618	.797	.326	1.946

* $p < 0.05$, *** $p \leq 0.0001$

Figure 1. ROC curve for predictors



The Figure 1, a measure for goodness - of - fit- applied to evaluate the fit or appropriateness of logistic regression model through simultaneously measuring sensitivity (True positive) and specificity (True negative) for all possible cutoffs and these points plotted on the “x” axis, Specificity, while on the ‘y’ axis, Sensitivity. The area under the curve “ROC curve”, Receiver Operating Characteristics, indicated the model fitness. Having this in mind, in the overall area under the ROC curve was 0.611 with 95% confidence interval (0.593, 0.629). Also, the area under the curve was significantly different from 0.5 since $p < 0.001$, that means, the logistic regression classified the group significantly better than the difference occurred due to chance factor. Moreover, the area under the curve for each variable indicated (Gender = 0.506, educational status = 0.569, district = 0.540, crime type = 0.579, and term of sentence = 0.502).

Discussion and Conclusion

The finding of this study generated statistically no different result between theoretically estimated values and the observed value which ensures that the prisoners’ experiences psychopathological symptoms. This might be due to the factors that ingrained into the personality of the prisoners; for example, the social stigma and discrimination that the prisoners gripped. To mention, they experience anguish, the guilt feeling for the offensive actions, lack of social support, and failing to adapt prison environment (i.e., rules and regulations, the guards’ behaviors, the excessive number of crowded in a room). Although this study indicates the gross magnitude of the problem, within the CORE-OM measure diverse category of psychiatric disorders have been addressed. Thus, the findings are

consistently related to other previous studies (e.g., Oxelson, 2009; Birmingham, 2003; De Viggiani, 2006; Fazel, & Baillargeon, 2010; Ogloff et al., 2011; Kinsler & Saxman, 2007; Kinyanjui & Atwoli, 2013; Solomon, 2013; Kubiak, 2005).

The relationship between the educational status of the prisoners and the level of psychopathological symptoms showed noteworthy result. That is to say, prisoner who were illiterate, grade 1-6 and grade 11-12 demonstrated more psychopathological symptoms than grade 7-8, grade 9-10 and above grade 12. Probably illiterate and prisoners from the lower educational level tended to possess less coping skills, perceive life as black or white, and not as much of socially interactive. Moreover, the illiterates and prisoners with low academic background are prone to expose themselves to substance abuse and acquire new foreign behaviors from the fellow prisoners. This might be due to the difference in cognitive skills to judge desirable behaviors from non-desirable behaviors (e.g., Silver et al., 2008; Kinyanjui & Atwol, 2013; Imai & Krishna, 2004). This study generated quite differing findings from a study conducted by other scholars; for example (Kinyanjui, & Atwoli, 2013) argued psychopathological symptoms more likely to be prevalent among educated inmates than the non-educated.

Crimes such as murder, theft and robbery, physical and emotional attacks predicted psychopathological symptoms. Although the reason criminals who committed such kind of offenses are vulnerable to psychopathological symptoms remains open for further studies, the basic idea lies behind to the trauma load inducing power of the offenses. Crimes such as killing and theft were more probably induced to severe psychological shock; more guilt feeling and result more social stigma and discrimination than the rest (Cunningham & Vigen, 2002). District as predictor variable, inmates from Sidama and Segen areas reported relatively high level of psychopathological symptoms. This finding shows the status of mental and behavioral disorders even subject to individuals' geographic and social differences. In other words, in some societies committing a crime and being jailed for the dues that the person committed of its own is seen as curse and a means of disgrace from the society. This, in turn, breeds guilt feeling, self-hatred, and stress born physical complaints. Moreover, the social values more likely allow to outcast such persons and the prisoners likely imagine and foresee the coming post-prison life, with whom and how they can live through overcoming the stigmatic and discriminatory treatments. With regard to term sentence as predictor variable, inmates who have been sentenced to more than 10 years conveyed significant psychopathological symptoms. This indicates that the more the prisoners stay in prison the more the probability of developing mental and behavioral illness which is not marginal. This might be attributed to prisoners' tendency to more likely feel that they are totally detached from the external social and physical world and observe themselves as born to be imprisoned. The other reason likely to be, as many scholars stated, prison environment across the world has poor quality in terms of crowd and shabby physical setting, ridged and despotic rules and regulations, and the broken and closed interpersonal relationships possibly to escalate the vulnerability to experience psychopathological symptoms.

According to the evidence gained from this study, as 48% of prisoners' experience psychopathological symptoms which offer inputs to counselors, social workers, health professionals, psychiatrists, legal protectors and other authorities who are determined to reduce crime through improving mental and behavioral wellbeing of prisoners. Besides, prevention and intervention programs essentially to be evidence based and consider the

gender, term of sentences, age, crime type, district administration, and educational status of prisoners.

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