



International Journal of Prisoner

## Quality of prison life, violence and mental health in Dubrava prison

Journal:	<i>International Journal of Prisoner Health</i>
Manuscript ID	IJPH-10-2017-0047.R4
Manuscript Type:	Research Paper
Keywords:	Health in prison, Mental health, Prison, Prisoners, Psychological health, Violence

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## Abstract

**Purpose:** This study set out to explore the association between the quality of prison life and mental health among prisoners and the occurrence of violence.

**Design:** 203 prisoners from Dubrava Correctional Centre (DCC) in Kosovo participated. Data on background characteristics of the prisoners, quality of prison life, mental health symptoms and exposure to physical, psychological and sexual violence was collected through interviewer-administered questionnaires. Data was analysed using general linear models (GLM) and manual backwards model search with step-wise exclusion.

**Findings:** Our GLM analysis showed a significant negative association between anxiety symptom load (-1.4), physical violence (-1.5) and psychological violence (-1.9), and quality of prison life. Furthermore, it appeared that prisoners rating of quality of life increased with time among prisoners not exposed to violence, while this was not seen among prisoners exposed to violence. Finally, there was an inverse association between the dimensions of *respect, fairness, humanity and good staff/prisoner relations*, and the proportion of prisoners exposed to violence.

**Value:** An environment with higher levels of respect, fairness, humanity and good relations between staff and prisoners was associated with lower levels of violence. Hence, a prison that focuses on promoting quality of life and good mental health among prisoners will show lower levels of violence, thereby making the prison a more tolerable place for the prisoners and a better working environment for prison staff.

## Introduction

Rates of violence, psychological distress, self-harm and suicide are high in most prison systems. Scholars of the prison have written a great deal about the 'pains and deprivations' of imprisonment (Cohen and Taylor, 1972; Liebling, 2011; Sykes, 1958), which impact negatively on the often already fragile mental health of prisoners (Senior et al., 2013). According to international law it is the responsibility of the state to ensure the security and safety of prisoners and to make sure that torture and other cruel and inhuman treatment does not occur, whether perpetrated by staff or by other prisoners (United Nations, 1987). To fulfil this obligation, prison authorities need to fully understand how the dynamics of prison life can lead to or inhibit violence. In the literature on prison violence, emphasis has been placed on characteristics of the individual, institutional factors and aspects of the prison environment (Arrigo and Milovanovic, 2009; Bierie, 2012; Hochstetler and DeLisi, 2005). Individual factors include characteristics of the individual which are thought to be predictors of violence, such as personality, behavior and criminal attitudes (Hochstetler and

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4 DeLisi, 2005). Institutional or environmental factors include the treatment of prisoners and  
5 detainees, including the use of disciplinary measures, communication style, the segregation of  
6 prisoners, and staff sub-cultures, as well as the physical conditions of detention, including living  
7 conditions, access to health care and adequate personal space. However, an integrated approach has  
8 emerged in this field, focusing on both ‘deprivation’ or institutional factors and ‘imported’ or  
9 individual factors and the ways in which they interact (Arrigo and Milovanovic, 2009; Gendreau et  
10 al., 1997). A conceptually helpful understanding of the prison environment focusing on  
11 interpersonal relationships and value dimensions in prisons has been developed which has made  
12 empirically clear that stark differences in the moral climates of prisons can have significant effects  
13 on outcomes for prisoners, including their survival (Liebling and Arnold, 2004). Liebling has  
14 argued that the worlds of ‘moral measurement’ and human rights standards in prisons should be  
15 brought closer together (Liebling 2011). Introducing a measure of ‘exposure to violence’ may be  
16 one way of synthesizing these agendas. Drawing on work mainly in the global South, Martin et al.  
17 (2014) identify three central and arguably universal themes that are important for understanding  
18 prison climates: namely survival, governance and transition (Martin et al., 2014). This approach  
19 involves asking questions about how people survive prisons, how authority is distributed in prisons,  
20 and how prisons change over time. These themes draw some inspiration from Liebling and her  
21 team’s pioneering work on the ‘moral performance’ of prisons (Liebling et al., 2012). In  
22 developing this perspective, Liebling and colleagues used Appreciative Inquiry as part of a rich,  
23 mixed-methods study to identify and explore in detail which specific aspects of prison life ‘matter  
24 most’ in measuring the quality of life from the perspective of both prisoners and staff. They  
25 established a framework to conceptualise and measure, in a grounded way, the most significant  
26 factors affecting prisoners’ quality of life. The key dimensions were primarily values relating to  
27 interpersonal treatment and safety (Liebling et al., 2012). Aspects of the prison experience such as  
28 respect, humanity, fairness and prisoner-staff relationships were crucial to prisoners and are related  
29 to the way they feel treated by staff. Hence the quality of prison life is dependent on and interrelated  
30 with social practices of everyday life (Liebling et al., 2012; Liebling and Arnold, 2004). In  
31 particular, disrespect and unfair or degrading treatment lead to psychological pain, anger, tension,  
32 depression and rage (Liebling, 2011). Addressing or preventing these aspects of prison life and  
33 promoting positive interpersonal relations could prevent negative outcomes including violence in  
34 places of detention. It is also clear that experienced and observed violence at work can also decrease  
35 staff security and increase the risk of burnout (Isenhardt and Hostettler, 2016). In this regard, we  
36 would expect that the prevention of violence in prisons would contribute to improved workplace  
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4 environments for prison staff as well as better outcomes for prisoners, and fewer breaches of  
5 international human rights standards.

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7 The overall goal of this study, therefore, is to measure how (i) perceived quality of prison life and  
8 (ii) mental health among prisoners are associated with (iii) the occurrence of violence in prison. The  
9 research team combined prison sociological and mental health expertise. Using an adapted and  
10 translated version of the Measuring Quality of Prison Life (MQPL) survey developed by Liebling et  
11 al. (2012), the study explores and analyses the quality of prison life in the main prison for adults in  
12 Kosovo – Dubrava Correctional Center (DCC). The aim of the study is to systematically explore the  
13 relationships between the moral quality of prison life, the mental health of prisoners, and the risk of  
14 exposure to violence. We hope that the findings from this study might guide and facilitate  
15 improvements in prison management, in thinking about prison quality, and in prisoner treatment in  
16 a way that might reduce violence in prison.  
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27 First, we investigate whether and how background characteristics are associated with the overall  
28 quality of prison life and thereby explore whether certain underlying factors can explain the  
29 variations in ratings of the prison climate. Second, we explore whether and how different health  
30 indicators and violence exposures are associated with the quality of prison life.  
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## 35 **Methodology**

### 36 *Setting and participants*

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38 The present study was undertaken in DCC in Kosovo. Data was collected in the period from April  
39 2012 to June 2012. Out of eight pavilions, the four with the most general functions were selected  
40 for the study. Of a total of 558 prisoners (P3=143, P4=146, P5=135, P6=134) 203 were randomly  
41 selected for participation in the study, which results in a sampling fraction of 36%. Data was  
42 collected with an interviewer-administered questionnaire, by interviewers trained and supervised in  
43 the use of the questionnaire. The training comprised interview techniques, signs of traumatization  
44 and traumatic stress, prison research and research ethics. The interviewer-administered  
45 questionnaires were filled out at the offices of the medical technicians and social workers with the  
46 consent of the supervisors of the pavilions. Informed consent was obtained prior to participation, in  
47 which participants were given information about the aim and content of the study and their rights as  
48 participants, including their opportunity to ask questions about the research at any time; that their  
49 participation was voluntary and they had a right to withdraw at any time; that no person-attributable  
50 data would be collected or reported and that their participation was anonymous.  
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4 There exists no national committee or controlling agent for ethical review of scientific research in  
5 Kosovo and the study was therefore not obliged to seek ethical approval at a national level. The  
6 study was approved by the local prison authorities and by the internal ethical committee at  
7 DIGNITY.  
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### 11 12 13 *Assessment measures*

14 The questionnaire was informed by the MQPL instrument (Liebling et al., 2012; Liebling and  
15 Arnold, 2004) supplemented by a series of questions on background characteristics, physical and  
16 mental health indicators (items from Harvard Trauma Questionnaire and Hopkins Checklist-25) and  
17 violence exposure. The MQPL comprises 126 items, formulated as statements regarding the  
18 prisoners' experience of their life in prison (Liebling et al., 2012). Each item is rated on a Likert-  
19 scale (strongly agree, agree, neither agree nor disagree, disagree and strongly disagree) and coded  
20 from 1 to 5, with 3 as a neutral score. Each item is coded so the statement is rated from a negative  
21 to a positive evaluation, i.e. the item '*I receive support from staff in this prison*' is recoded so the  
22 response categories are listed from '*strongly disagree*' to '*strongly agree*'. The statements are  
23 organized into 21 dimensions representing both treatment and physical conditions. The validation of  
24 the 21 dimensions is described in Liebling et al. (2012) as a combination of conceptual and  
25 statistical methods, and reliability was assessed using a principal components analysis. All  
26 dimensions had reliability scores from 0.561 to 0.889 (Liebling et al., 2012). For each dimension, a  
27 composite mean score of the responses of items was calculated. The MQPL also includes a global  
28 question assessing the prisoners overall rating of the quality of life (from now on QoL) in prison:  
29 '*Overall, on a scale of 1 to 10 (where 1=lowest and 10= highest), which score do you think this*  
30 *prison deserves in terms of the quality of life of the prisoners (where quality refers to your general*  
31 *treatment*'. This global question was used as the dependent variable in subsequent general linear  
32 models (GLM). The individual background factors included were *first time in prison* (first timers,  
33 previously imprisoned), *daytime activity* (school/training, work or nothing), *age* (continuous and  
34 20% percentiles), *length of time served at the time of interview* (continuous and 25% percentiles),  
35 *length of the sentence* (continuous and 25% percentiles) and *pavilion* (P3, P4, P5, P6). It should be  
36 noted that the four pavilions are different types of regime (P3=standard, P4=advanced, P5 =  
37 standard & basic, and P6 = advanced) which determines the level of benefits/privileges the  
38 prisoners have. Prisoners are allocated to the pavilions based on individual criteria not fully known  
39 by the research team. Due to these unknown circumstances regarding the pavilions, this variable  
40 was not included in the stratified analysis (This will be elaborated further on in 'Findings'). Mental  
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4 health was measured with items from the Harvard Trauma Questionnaire (HTQ) and Hopkins  
5 Checklist-25 (HSCL-25). Due to restricted resources the full instruments could not be used. Hence,  
6 three items each to represent PTSD, depression and anxiety, respectively, were applied. Three items  
7 from HTQ were used to measure symptoms related to PTSD. These include the symptoms *recurrent*  
8 *nightmares, feelings of irritation or quick anger, and feelings of having no future.* For symptoms  
9 related to depression and anxiety HSCL-25 was used with 3 items each. Depression related  
10 symptoms include *feelings of slowness and low energy, feelings of depression and boredom, and*  
11 *low appetite.* Anxiety related symptoms include *anger and feeling internally upset, feelings of*  
12 *terror or panic, and feeling tight chested or unable to sit in peace.* Both instruments rate on a 4-  
13 point scale according to how much the person has been bothered by the symptoms during the  
14 previous week. A mean score is calculated for symptoms of PTSD, depression and anxiety. For  
15 PTSD related items a cut-off value was set to an average of  $\geq 2.5$ , which is considered to be  
16 predictive of clinically significant PTSD (Cardozo, 2000; Mollica et al., 1999). For the anxiety and  
17 depression related items from the HSCL-25 a cut-off point is set to an average of  $\geq 1.75$ , which is  
18 considered to be predictive of clinically significant depression or anxiety (Cardozo, 2000). We  
19 tested in advance the predictive value of the three-item scores versus the scores of the full  
20 instruments in a dataset of 147 clients of mixed country origin assessed in DIGNITY's  
21 rehabilitation clinic (Carlsson, 2005). We found that the positive predictive value of the three-item  
22 test (mean score  $\geq 2.5$ ) with the full instrument as gold standard were 0.96, 0.92 and 0.82,  
23 respectively, for PTSD, depression and anxiety. Negative predictive values were 0.72, 0.94 and  
24 0.89. Additionally, self-reported mental and chronic diseases and self-reported alcohol and drug  
25 abuse were recorded.

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42 Violence exposure (physical, psychological and sexual) was self-reported (yes/no and "If yes,  
43 please write number of times you have been subjected to violence during the last three months")  
44 and for each type of exposure the prisoner was asked who the offender was (staff, prisoner or both).  
45 Furthermore for each type of exposure, the prisoners who answered "yes" was asked to describe  
46 what happened in the worst case they had experienced in the prison.

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51 All questions in the questionnaire were translated into Albanian in collaboration between the  
52 authors, and thoroughly validated through an orally back-translation into English. This included an  
53 idiomatic adaption of the dimensions and tools to fit the local and cultural context of the prison.

#### 54 55 56 57 58 *Statistical analysis*

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Background characteristics, health indicators and violence exposure were compared between study groups using  $\chi^2$ , student's t-test, and oneway ANOVA f-test as appropriate. If there were heterogeneous variances Welch-test was used. GLMs were used for hypothesis testing and the final models are the result of a manual backwards model search with step-wise exclusion of the least significant variable, until all variables in the model reached statistical significance. Tests were two-sided and p-values  $<0.05$  was considered to indicate statistical significance. Data was entered and analyzed with SPSS statistics 19.

## Findings

### *Background characteristics of study participants*

Table 1 shows means and prevalence of different individual background characteristics distributed by pavilion. The table shows that the majority of prisoners were of Kosovo-Albanian origin (97 %), were first time prisoners (71%), and reported *nothing* as their main daytime activity (62%). The mean age of prisoners was 34 years, the mean length of sentence was close to nine years and at the time of the interview prisoners had on average served approximately three years. Table 1 shows that there was a statistically significant difference between the pavilions with regard to several background factors.

### **Position of Table 1**

### *Prisoner health and violence exposure*

Table 2 shows the prevalence of self-reported chronic physical diseases, mental health conditions, and prevalence of symptom loads considered predictive of clinically significant PTSD, anxiety and depression diagnosis. The table shows a high proportion of prisoners reporting symptom loads predictive of depression (28%-49%) and anxiety (19%-36%). A symptom load predictive of PTSD was less common. Self-reported mental health disease was reported from 2-10% of cases, indicating a discordance between symptom load and self-reported health, at least with regards to mental health. Drug and alcohol abuse were the only health indicators that differed significantly between pavilions.

### **Position of Table 2**

Table 3 shows the prevalence of violence exposure distributed by pavilion. For both physical and psychological violence, 'staff' was the reported offender twice as often as other prisoners were. Sexual violence was reported by five prisoners.

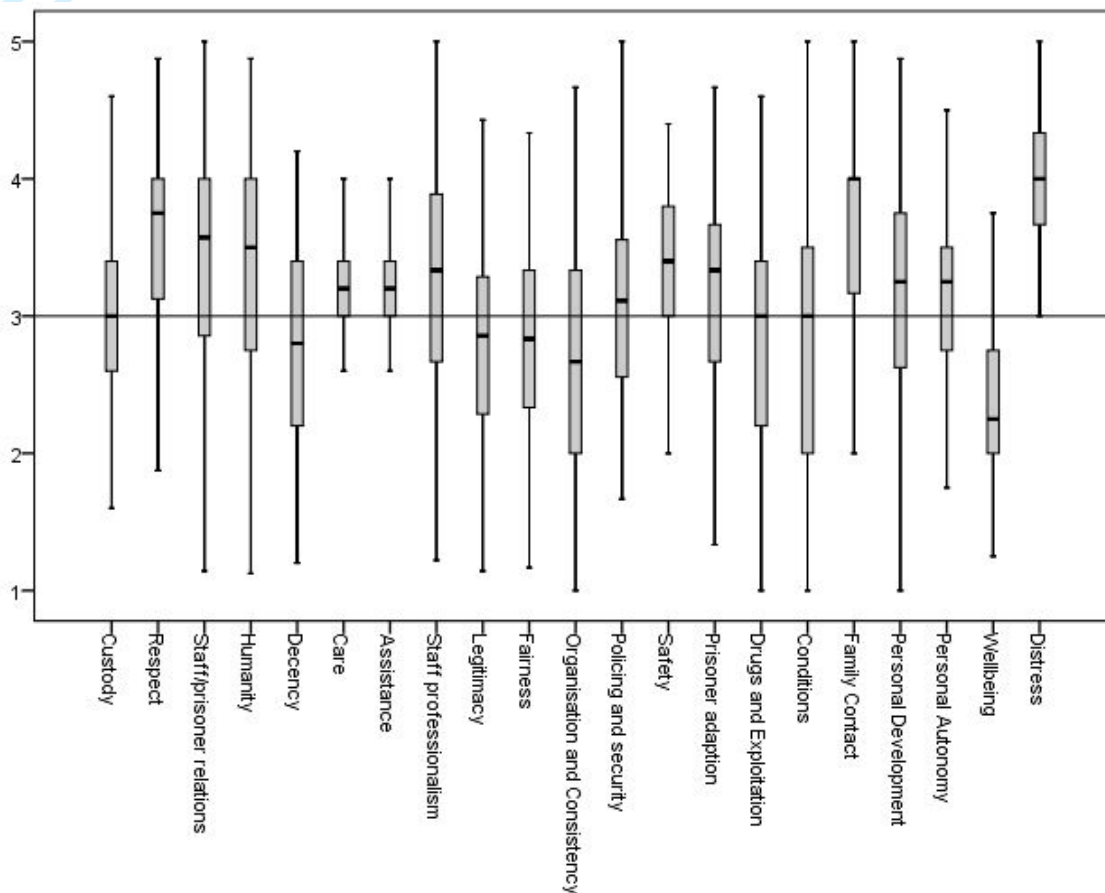
### **Position of Table 3**

#### *Quality of prison life*

Of a total of 203 prisoners, a large proportion (29%) rated the overall experience of life in prison as 1, the lowest score possible. Only 25% of the prisoners gave a positive rating (score higher than 5). The mean score is 4 (SD=2.7). Figure 1 shows the mean score of the MQPL dimensions. For the majority of dimensions, the mean score fluctuated around the middle score 3, indicating a neutral attitude towards the prison climate. However, a few fluctuations should be mentioned. Distress was the highest ranked dimension (4.0, SD 0.68), implying that many prisoners do not self-report a high level of distress. With regards to the *respect* dimension, the mean score was 3.5 (SD 0.69) indicating that the prisoners felt that there was a respectful climate in the prison. Also, with regards to family contact there was a positive rating (3.6, SD 0.76), indicating that prisoners felt that they were able to maintain family relationships. The dimensions with the lowest means were *well-being* (2.4, SD 0.60) and *fairness* (2.8, SD 0.71) indicating low well-being and dissatisfaction with the level of fairness that the prisoners were treated with. AsLike with self-reported safety in prisons, there is a paradox that prisoners often report very low well-being rather than high levels of distress in surveys. Qualitative studies suggest that indirect indicators of fear and distress in particular are more forthcoming in research even when such feelings are described as 'intolerable' (See Bottoms, 1999).



FIGURE 1: Prisoners' views of the quality of prison life in DCC



### Background factors and Quality of Life

To elaborate on the relation between background factors and the prisoners' assessment of their quality of life, several GLMs were tested to see which factors ~~that~~ could describe the variations in mean score on the overall QoL scale. First, we tested a simple model only including main effects. The simple model was expanded with more variables and all two-way interactions. The model search showed that when no interactions were included the only significant background factors were *first time in prison*, with first timers on average scoring 1.0 (CI: 0.14-1.8) point higher on the QoL scale than the previously imprisoned, and *daytime activities* where prisoners with work on average scored 1.3 (CI: 0.5-2.1) point higher on the QoL scale than prisoners doing nothing, and prisoners in school scored on average 0.9 (CI: -2.7 – -0.9) point lower on the QoL scale compared to the same reference group. However, when all two-way interactions were included, it was evident that there are effect modifications between several background factors, indicating that the rating of QoL differs within subgroups of the background factors.

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4 The critical assumption for a model including *first time in prison, daytime activities, length of time*  
5 *served, length of sentence, age, pavilion* and interactions were tested both graphically and  
6 numerically (Levene's test  $p=0.52$ , Kolmogorov-Smirnov test  $p=0.069$ ). Even though, the final  
7 model fulfills the critical criteria for GLM. We decided to exclude pavilion from the model for the  
8 following reason: Allocation of prisoners to pavilion is likely to take place based on individual  
9 characteristics – some already included in the model - and this will make pavilion an intermediate  
10 rather than an independent variable in the assumed association between individual characteristics  
11 and quality of prison life. Consequently, we used a model including *first time in prison, daytime*  
12 *activities, length of time served, length of sentence, age* and interactions. The critical assumptions  
13 for the model were tested, but it did not fulfill the critical criteria of normal distributed residuals  
14 (Kolmogorov-Smirnov  $p=0.045$ ). Furthermore, the  $R^2=0.32$  indicates that the model only explained  
15 32% of the variation.  
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#### 25 26 27 *Mental health, violence exposure and quality of prison life*

28 To elaborate on the relation between different health indicators and quality of prison life we used  
29 GLMs. Included as possible explanatory variables were PTSD symptom load (yes, no), anxiety  
30 symptom load (yes, no), depression symptom load (yes, no), exposure to physical violence by staff  
31 and/or prisoners (yes, no), exposure to psychological violence by staff and/or prisoners (yes, no),  
32 exposure to sexual violence by staff and/or prisoners (yes, no), self-reported chronic disease (yes,  
33 no), self-reported mental disease (yes, no), problems with alcohol (yes, no) and problems with  
34 drugs (yes, no). The backwards manual model search ended up with a model where anxiety  
35 symptom load, and exposure to both physical and psychological violence were negatively  
36 associated with quality of prison life. We tested the critical criteria for the model and found  
37 homogeneity of variances (Levene's  $p=0.10$ ) and ~~that~~ the residuals approximately followed a  
38 normal distribution ( $p=0.048$ , with the p-p plot showing that the estimated and expected residuals  
39 seem to follow the same distribution).  
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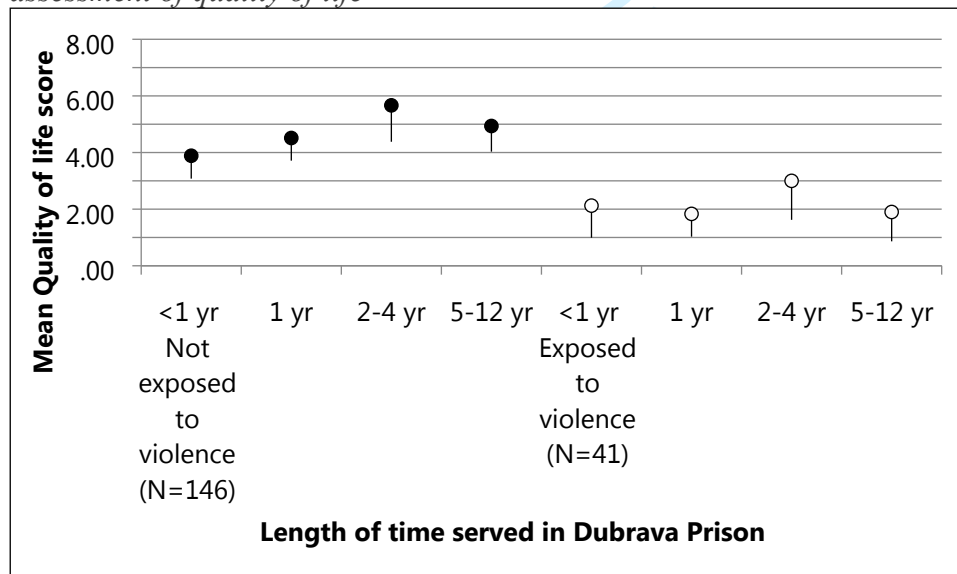
49 The final model is shown in Table 4 below. There was an association between anxiety symptoms,  
50 exposure to physical and psychological violence and mean values of the QoL scale, which means  
51 that these factors explain some of the variation in mean values of the QoL scale. The table shows  
52 that prisoners with a symptom load predictive of an anxiety diagnosis, scored 1.4 point lower on the  
53 QoL scale compared to prisoners who did not have anxiety symptoms. Apparently, psychological  
54 violence is the exposure which affects the QoL score the most, as prisoners subjected to  
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psychological violence scored 1.9 point lower on the QoL scale compared to prisoners who were not.

#### **Position of Table 4**

As shown in Table 4, violence exposure has a negative impact on the evaluation of quality of prison life. We wanted to investigate if the length of time served influenced the relation between violence and QoL. The results are shown in Figure 2. The figure indicates that for prisoners not exposed to violence the rating of quality of prison life increases with the length of time the prisoners have served, with prisoners who served more than two years rating a better QoL than those who served less than two years. The difference was almost statistically significant ( $p=0.056$ ). This effect does not seem to appear for prisoners exposed to violence, neither did it reach statistical significance ( $p=0.29$ ).

*FIGURE 2: The effect of length of time served in prison and violence exposure on the self-reported assessment of quality of life*



Note: Means are calculated with one-way ANOVA. Analyses were conducted separately for each exposure group.

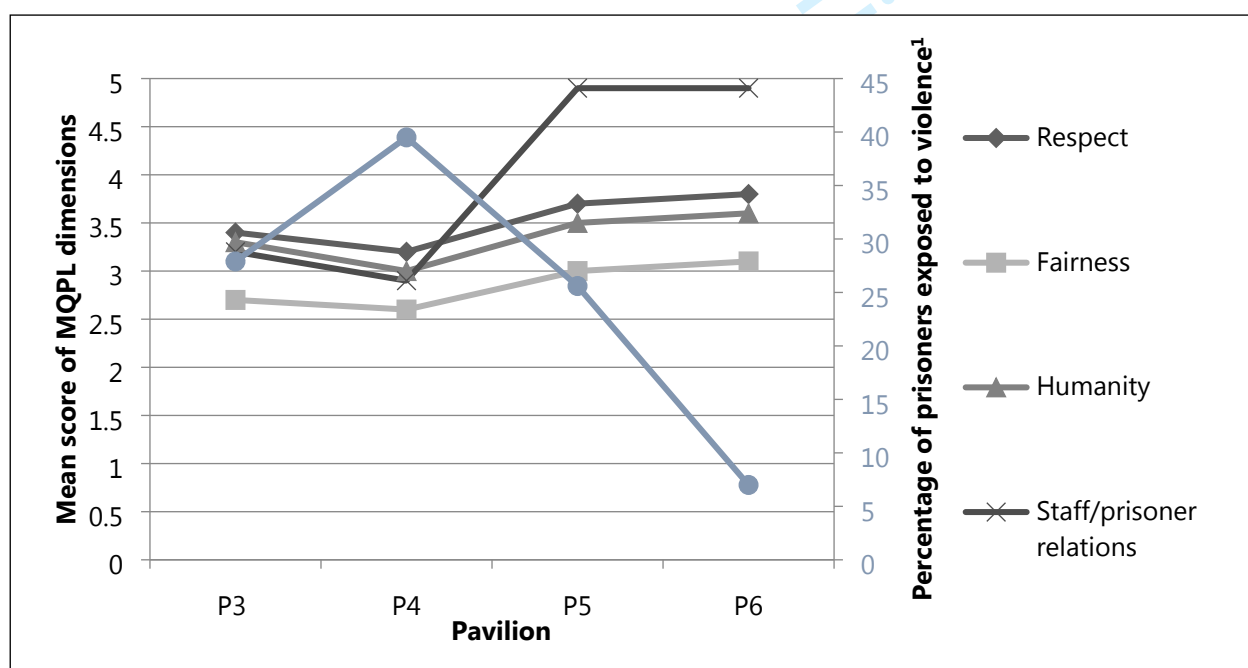
Liebling et al. identified the four value dimensions: respect, fairness, humanity and staff/prisoner relations as being very important for prisoners' assessment of quality of life. In our analysis, we also found a correlation between each of these four dimensions and our overall QoL-score (respect ( $R^2=0.43$ ), fairness ( $R^2=0.58$ )), humanity ( $R^2=0.48$ ) and staff/prisoner relations ( $R^2=0.47$ ). We explored the relation between the four dimensions and the overall QoL score. In the initial model

the composite mean score of the four dimensions together with the composite mean score of physical condition dimension were included. After the model search we ended up with a model, where the three dimensions fairness, humanity and staff/prisoners relationship had significant effect on the overall QoL rating. The model showed weak evidence for heterogeneity of variances ( $p=0.038$ ), however the model fulfilled the criteria of normal distribution of residuals (Kolmogorov-Smirnov  $p=0.49$ ). Thus we argue that the model can function as an explanatory model of the relation between values, conditions, and QoL. Table 5 shows the difference in mean score of the QoL scale between subgroups (5 groups with mean values ranging from 1-1.99, 2-2.99, 3-3.99, 4-4.99, 5-5.99) of the dimension scores. The dimensions are coded from negative to positive evaluation. For the fairness dimension a clear gradient was evident, so that prisoners having a low composite mean fairness score also scored low on the QoL scale.

### *Position of Table 5*

We wanted to see if the rating of these dimensions correlated with violence exposure in the different pavilions. The mean scores of the four dimensions are shown in Figure 3 (left y-axis), the violence exposure, combining physical, psychological and sexual violence is depicted on the right y-axis. The mean score of the dimensions differed statistically across pavilions, with P4 scoring lowest on all dimensions.

*FIGURE 3: Mean values of four MQPL dimensions and violence exposure distributed by pavilion*



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4 1: Percentage of prisoners exposed and not all reported violent events  
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6 There seems to be a consistent inverse association between mean score of the prison climate  
7 dimensions and the level of violence exposure. The figure shows that P6 which has the highest  
8 score on four out of five dimensions also has the lowest prevalence of prisoners exposed to violence  
9 (7%). As for P4 which has the lowest mean score on all dimensions, this pavilion has the highest  
10 proportion of prisoners being exposed to violence (39%).  
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## 17 Discussion

18 This study represents first of its kind data from a prison setting in Kosovo, which and enabled an  
19 in-depth investigation of quality of prison life, prison violence and mental health. The data, which  
20 was collected by trained interviewers from a local NGO, provided important information to  
21 improve our understanding of the effect that violence and poor prison climate can have on prisoners  
22 and their rehabilitation.  
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29 This study showed a high prevalence of anxiety and depression related symptom load, with 26.9 %  
30 of the total population showing anxiety related symptoms and 40.1 % showing symptoms of  
31 depression. The prevalence of self-reported mental health disease according to our results was much  
32 lower, 5.6 % of the total population. However, we believe there could be an underreporting of the  
33 self-reported mental health conditions, as the high symptom load of anxiety and depression, found  
34 by trained interviewers with a valid mental health instrument, would be a more valid measuring  
35 method.  
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41 The violence reported by prisoners was allegedly mostly perpetrated by prison staff. Though this  
42 could indicate that hostile attitudes are more common among staff than inmates, there is also a risk  
43 of underreporting on violence committed by co-inmates, due to fear of reprisal or feelings of  
44 solidarity (Minke, 2010).  
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48 The global question on QoL was below neutral, with 4 as the mean score among all prisoners (1-10  
49 scale), with 29 % of all inmates rating their QoL to be 1, the lowest score possible. However, most  
50 of the dimensions in the MQPL (13 of 21 dimensions) were scored above the neutral level of 3. The  
51 dimensions “respect”, “staff/prisoner relations”, “humanity” and “family contact” had means above  
52 neutral, while dimensions such as “well-being” and “decency” were rated negative.  
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58 Our analysis of the relation between background factors and QoL showed that the variables first  
59 time in prison, activities in prison, time served, length of sentence, age and significant interactions  
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4 between these factors only explained 32 % of the variation in the QoL scores of prisoners. This led  
5 us to investigate the influence of health issues and violence exposure on QoL, which showed that  
6 anxiety symptom load, physical violence and psychological violence had a significant, independent,  
7 negative impact on QoL, with a yes to these factors reducing QoL score means by respectively 1.4,  
8 1.5 and 1.9. Hence, exposure to psychological violence is the one factor in our study which reduces  
9 QoL the most.  
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16 Comparing the QoL among prisoners who had served different lengths of time, we could see that  
17 QoL improved over time, among those prisoners who were not exposed to violence. This positive  
18 development was not apparent among prisoners exposed to violence, indicating that exposure to  
19 violence interrupts a seeming adaptation to prison life.  
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25 Comparing mean scores between the four pavilions on the four dimensions found to be of greatest  
26 importance in studies by Liebling, showed an inverse relationship between these dimensions and  
27 violence. The pavilion with the lowest proportion of prisoners exposed to violence had the highest  
28 mean values on the four MQPL-dimensions. This indicates an inverse association between violence  
29 in prisons and quality of prison life: violence within prisons negatively affects various aspects of the  
30 prisoner's quality of life. Though this relationship between violence and quality of life could seem  
31 obvious, we believe our results support the documentation of this relationship and thereby the  
32 problems of violence and ill-treatment within prisons. In this cross-sectional study, we were unable  
33 to determine the direction of the causality: whether high quality of life reduces violence, or whether  
34 level of violence determines quality of life. However, when sentence time passes, QoL increases for  
35 persons not exposed to violence, whilst it does not for those inmates who have been exposed to  
36 violence.  
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46 In conclusion, our results support our hypothesis that negative aspects of prison environment are  
47 associated with violence, as an environment with higher levels of respect, fairness, humanity and  
48 good relations between staff and prisoners was associated with lower levels of violence. These  
49 findings replicate those in policing studies, which show a high correlation between negative  
50 'traditional cultural' attitudes and use of force against arrestees (Terrill et al., 2003). Hence, we  
51 would expect that a prison that focused on promoting quality of life, a decent moral climate, and  
52 good mental health among prisoners would show lower levels of violence, thereby making the  
53 prison a more tolerable place for the prisoners and a better working environment for prison staff.  
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4 It is significant that a survey exploring the moral quality of prison life can be used to diagnose the  
5 presence of violence in prisons or prison wings, as well as to understand and document its negative  
6 effects. One of the striking outcomes of this research exercise was the way in which ‘moral failings’  
7 can be operationalised and assessed, and the joint efforts of prison sociologists, medical  
8 practitioners, and NGOs working to prevent torture in places of detention, can be harnessed to  
9 constructively describe complex prison environments, their risks, and their differences.  
10 We hope that the findings from this study might guide and facilitate improvements in prison  
11 management, by encouraging an increased focus on prison quality and prisoner treatment in a way  
12 that might reduce violence in prison.  
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**Table 1 Background characteristics distributed by pavilions**

	<b>P3 n=67</b>	<b>P4 n=42</b>	<b>P5 n=49</b>	<b>P6 n=43</b>	<b>Total 201</b>	<b>p-value<sup>1</sup></b>
<b>Regime</b>	Standard	Advanced	Standard & basic	Advanced		
<b>Mean Age (years)</b>	33	33	31	41	34	***
<b>Nationality n (%)</b>						NS
<i>Kosovo-Albanian</i>	66 (98.5)	41 (97.6)	46 (93.9)	42 (97.7)	195 (97.0)	
<i>Serbian</i>	0	0	1 (2.0)	0	1 (0.5)	
<i>Turkish</i>	1 (1.5)	0	0	0	1 (0.5)	
<i>Foreign Citizen</i>	0	1 (2.4)	2 (4.1)	1 (2.3)	4 (2.0)	
<b>Mean length of sentence (years)</b>	5.6	10.3	7.5	14.1	8.9	***
<b>Mean length of time served at the time of data collection (years)</b>	1.3	4.1	2.3	5.0	2.7	***
<b>First time prisoners n(%)</b>	36 (53.7)	32 (76.2)	37 (73.5)	39 (90.7)	143 (71.1)	***
<b>Main daytime activity n(%)</b>						***
<i>School/training</i>	2 (3.0)	5 (11.9)	1 (2.0)	1 (2.3)	9 (4.5)	
<i>Work</i>	15 (22.4)	6 (14.3)	7 (14.3)	39 (90.7)	67 (33.3)	
<i>Nothing</i>	50 (74.6)	31 (73.8)	41 (83.7)	3 (7.0)	125 (62.2)	

<sup>1</sup>For mean values p-value is calculated based on one-way ANOVA F-test. For proportions p-value is calculated based on  $\chi^2$ - test. NS = Not Significant ( $p > 0.05$ ), \* =  $p \leq 0.05$ , \*\* =  $p \leq 0.01$ , \*\*\* =  $p \leq 0.001$ .

**Table 2 Morbidity prevalence distributed by pavilion**

	<b>P3</b> <i>n=63</i>	<b>P4</b> <i>n=42</i>	<b>P5</b> <i>n=49</i>	<b>P6</b> <i>n=43</i>	<b>Total</b> <i>n=197</i>	<b>p-value<sup>1</sup></b>
<b>Chronic physical disease</b>	9 (14.3)	11 (26.2)	6 (12.2)	8 (18.6)	34 (17.3)	NS
<b>Mental health disease</b>	5 (7.9)	4 (9.5)	1 (2.0)	1 (2.3)	11 (5.6)	NS
<b>PTSD related symptom load</b>	5 (7.9)	4 (9.5)	6 (12.2)	1 (2.3)	16 (8.1)	NS
<b>Anxiety related symptom load</b>	18 (28.6)	15 (35.7)	12 (24.5)	8 (18.6)	53 (26.9)	NS
<b>Depression related symptom load</b>	25 (39.7)	18 (42.9)	24 (49.0)	12 (27.9)	79 (40.1)	NS
<b>Drug abuse</b>	8 (12.7)	2 (4.8)	-	-	10 (5.1)	**
<b>Alcohol abuse</b>	6 (9.5)	1 (2.4)	-	-	7 (3.6)	*

<sup>1</sup>p-value is calculated based on X<sup>2</sup>-test. NS = Not Significant (p>0.05), \*indicates p≤0.05, \*\* indicates p≤0.01, \*\*\* indicates p≤0.001.

**Table 3 Prevalence of violence exposure distributed by pavilion, *n* (%)**

	<b>P3</b> <i>n</i> =63	<b>P4</b> <i>n</i> =42	<b>P5</b> <i>n</i> =49	<b>P6</b> <i>n</i> =43	<b>Total</b> <i>n</i> =197	<b>p-value<sup>1</sup></b>
<b>Exposed to physical violence</b>						
By staff	5 (7.9)	3 (7.1)	4 (8.2)	1 (2.3)	13 (6.6)	NS
By other prisoners	1 (1.6)	3 (7.1)	2 (4.1)	1 (2.3)	7 (3.6)	
<b>Exposed to psychological violence</b>						
By staff	3 (4.8)	6 (14.3)	3 (6.1)	-	12 (6.1)	**
By other prisoners	-	4 (9.5)	1 (2.0)	-	5 (2.5)	
By both	5 (7.9)	2 (4.8)	1 (2.0)	-	8 (4.1)	
<b>Exposed to sexual violence</b>						
By staff	-	-	-	1 (2.3)	1 (0.5)	NS
By other prisoners	1 (1.6)	2 (4.9)	-	-	3 (1.5)	
By both	-	1 (2.4)	-	-	1 (0.5)	
<b>Number of victims</b>	12 (27.9)	17 (39.5)	11 (25.6)	3 (7)	43 (22)	**

<sup>1</sup>p-value is calculated based on  $\chi^2$ -test. The p-value for total victimization is calculated based on student's t-test. NS = Not Significant ( $p > 0.05$ ), \* indicates  $p \leq 0.05$ , \*\* indicates  $p \leq 0.01$ , \*\*\* indicates  $p \leq 0.001$

**Table 4 The effect of health indicators and violence exposure on the self-reported assessment of quality of life**

		Mean difference in QoL score (CI95)	p-value <sup>1</sup>
<b>Anxiety symptom load</b>	Yes	- 1.4 (-2.2- -0.6)	**
	No (ref)	0	
<b>Physical violence exposure</b>	Yes	- 1.5 (-2.7- -0.3)	*
	No (ref)	0	
<b>Psychological violence exposure</b>	Yes	- 1.9 (-2.9 - -0.8)	**
	No (ref)	0	

<sup>1</sup>p-value is calculated based on UNIANOVA t-test. \*indicates  $p \leq 0.05$ , \*\* indicates  $p \leq 0.01$ , \*\*\* indicates  $p \leq 0.001$

Note: The overall F-test was significant for all included variables.

**Table 5 The association between prison climate (dimensions) and mean values of QoL**

	Mean (SD)	CI95	p- value <sup>1</sup>	Bonferroni
<b>Fairness</b>				
Mean score of 1-1.99	-2.8	(-4.4 - -1.3)	***	a
Mean score of 2.-2.99	-2.4	(-3.6- -1.1)	***	a
Mean score of 3-3.99	-0.4	(-1.5- 0.8)	NS	b
Mean score of 4.-4.99	0			c
Mean score of 5-5.99	-	-	-	-
<b>Humanity</b>				
Mean score of 1-1.99	-1.7	(-3.3- -0.05)	NS	a
Mean score of 2.-2.99	-1.5	(-2.7- -0.3)	*	a
Mean score of 3-3.99	-2.1	(-2.7- -1.4)	***	b
Mean score of 4.-4.99	0			c
Mean score of 5-5.99	-	-	-	-
<b>Staff/prisoner relationship</b>				
Mean score of 1-1.99	-1.7	(-4.5-1.1)	NS	a
Mean score of 2.-2.99	-1.3	(-3.9- 1.3)	NS	a
Mean score of 3-3.99	-0.2	(-2.7- 2.2)	NS	b
Mean score of 4.-4.99	0.8	(-1.6-3.2)	NS	c
Mean score of 5-5.99	0	-	-	bc

Note: The overall f-tests were significant for all included variables.

<sup>1</sup>p-value is calculated on t-test, NS = Not Significant ( $p > 0.05$ ), \* indicates  $p \leq 0.05$ , \*\* indicates  $p \leq 0.01$ , \*\*\* indicates  $p \leq 0.001$

<sup>abc</sup> indicate results from bonferroni adjusted estimates of multiple comparisons.