

Non Emergency Calls-Depression Coupling in Call Handlers of Rescue 1122 Punjab, Pakistan

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The study was conducted to know whether bulk inflow of Non Emergency Calls (NECs) acts as an independent predictor for depression in call handlers of Rescue 1122, Punjab, Pakistan. Forty five (45) call handlers were recruited from evening shift of 9 districts. Similarly, same-sized control group was made out of field rescuers. The groups were compared for rate and severity level of depression using Beck's Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). Probable predictors (except workplace stress) for depression in call handlers were evaluated through risk estimates. For workplace stress, a purposefully developed close-ended Workplace Stress Questionnaire including two subscales i.e. Non Emergency call and Control Room Environment of 30 items each was administrated. Twenty nine (64.4%) subjects of study group reported depression on BDI. Consequently, the same group had significantly higher mean depression score than control (18.2 vs. 12.6; $p = .00$). The scores also showed insignificant association with any of the probable predictors (demographic variables) of the call attendees. The respondents perceived more occupational stress against NECs. The findings attract the attention of authorities towards the severity of the concern.

Keywords. Emergency service, call centre, depression, occupational stress, predictor, Pakistan

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The rate of mental depression is increasing day by day in all walks of life including public/private employees. The worker faces impairment of daily functioning through low mood and activity disinclination (American Psychological Association, 2013; Lin, Yen, Chen, & Chen, 2014). Eventually, a scenario of low occupational output accompanied by poor financial gain and danger of being fired emerges. Likewise, an employee becomes victim of negative stress (i.e. distress) – a predictor for depression on perceiving lack of required resources to cope with stressful events (Shapero et al., 2014) e.g., work overload.

The Rescue 1122, Punjab, Pakistan - the largest humanitarian service (Associated Press Pakistan, 2014) is famous for its smart working in both, emergencies and disasters. All of its segments are equally important but pivotal role of call handlers also called Computer Telephony Wireless Operators (CTWOs) is highly significant. Reception of phone call from sufferer/bystander of incidence (Abid et al., 2016), integration for service dispatch, and technical support to caller (for loss minimization) are amongst the major job specifications of a CTWO. The job versatility necessitates leadership-oriented adaptability (Muthuveloo, Kathamuthu, & Ping, 2014) and mental satisfaction.

The CTWOs have to face bulk inflow of non emergency calls (Rescue 1122, 2017) e.g. prank, obnoxious, or false calls especially in evening shift. Some lacunae in Laws of land against abusers of toll free calls encourage the nuisance. Non-purposive engagements of CTI device of control room and field emergency service (in case of non emergency calls) adversely affect the pace of service for true emergencies. Contrary to this malpractice, professional ethics expect well-mannered response from the emergency dealing highly occupied personals.

The entirely opposite circumstances develop certain signs of distress e.g. emotional insensitivity, loss of self-esteem and/or resilience (Klim & Cha, 2015; Shapero et al., 2014; Yasien, Nasir, & Shaheen, 2016). To address this anomaly, human resilience (Ahmed, Arshad, & Kausar, 2015) and coping strategies are used. Despite of steady effort, the residues of post-traumatic stress manifest their adverse impacts in the form of avoidance attitude. Unfortunately, such attitude is strictly discredited by the departmental management.

The Beckman's Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) is the first choice of the professionals while gauging depression in the employees of any organization or particular segment of society e.g. hospital patients in Pakistan (Khan, Marwat, Noor, &

Fatima, 2015). On higher severity level of depression, 2nd wave of investigation moves towards measurement of mental stress especially occupational stress. The study of Suri and Rizvi (2008) using call centre employees as subjects can be cited in this context. However, in the absence of already validated questionnaire to gauge the workplace stress (as in present study) makes development of a new scale mandatory.

Open-accessed online literature is available on depression in call handlers of outsourcing business sector (Khalid, Sarfaraz, Ahmed, & Malik, 2013; Khan & Du, 2014; Malik, Bashir, Khan, & Malik, 2013); mass awareness on emergency calls or reporting prank calls as major burden for emergency medical service (Tahir, Akbar, Kayani, Al Ramadhani, & Naseer, 2016; Waseem, Durrani, & Naseer, 2010). However, the most vulnerable community i.e. CTWOs of the Rescue 1122 has not yet been explored for depression. To fill the research gap, present questionnaires-derived work was conducted using recall methodology to know whether the bulk inflow of NECs acts as independent predictor for depression in the CTWOs. The findings draw attention of the concerned authorities to address the issue of NECs via integrated depression management.

Method

The study was conducted between December, 2016 and April, 2017 after obtaining permission from office of the Director General, Rescue 1122, Punjab, Pakistan.

Sample

The data was collected from the staff of Rescue 1122, Punjab, Pakistan. For this purpose, one district was selected from each of the 9 administrative divisions (hereby referred to as clusters) of Punjab province, Pakistan using simple random sampling technique. Moreover, all the CTWOs of evening shift were registered from the sampled districts. Those who had service experience (>1 year; as depression requires some minimal time for onset), work place-family conflict (as it is established predictor for depression; Fuss, Nübling, Hasselhorn, Schwappach, & Rieger, 2008) or refused to give participation consent were excluded (see Figure 1). On the other hand, control group was developed from field rescuers including fire fighters and ambulatory staff of the same emergency stations. The control group was only tested for their levels of depression, not work stress.

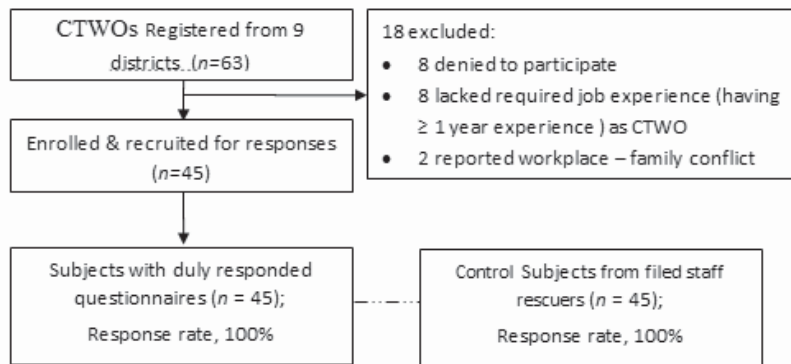


Figure 1: Flow sheet showing subject sampling for study group.

Instruments

Beck Depression Inventory. The BDI-II (Beck, Steer, & Brown, 1996) was applied to assess both, rate and severity level of depression in the participants. The BDI-II is scored at 4 point rating scale, ranging from 0-3 (total possible score = 63). The scale can be administered to individuals from 13 to 80 years of age while takes 5 minutes to response. The tool showed internal consistency Cronbach's alpha = .88) in present study.

Workplace Stress Questionnaire (WSQ). Judges' method was used to construct the items. One hundred ninety eight CTWOs from all over the province of Punjab were asked to enlist occupational stresses, individually. Based on the lists, 100 questions i.e. 50 for subscale 'CRE' and 50 for 'NECs' were constructed in English language with responses on 3 points Likert scale having score, as: 0 = *not at all true*; 1 = *somewhat true*; and 2 = *completely true*. The exactness of the questions was monitored by a linguistic expert. The questions were presented to 6 highly qualified (PhD) psychologists (4 men, 2 women) for face validity. Forty two and 40 questions were retained in former and later subscales, respectively on account of higher scoring rate by 50% of the judges. The questionnaire was administrated to 250 CTWOs of Punjab to see output of confirmatory factor analysis, and internal consistency (Cronbach's alphas: CRE = .68 & NECs = .64). However, 12 and 10 questions were dropped from former and later subscales, respectively on showing poor results in items' testing. Ultimately, each subscale carried 30 items (total possible score = 60). The total score of each respondent in a particular subscale was matched with reference ranges: score ≤ 20 (low stress), score between 21-40 (moderate stress) and scores > 41 (high stress)

after modified Suri and Rizvi (2008). Furthermore, each subscale had 3 dimensions *viz.* realistic perception, personality integration, and self evaluation of 10 items each. The questionnaire was again administered to 185 CTWOs and final internal consistency was $CRI = .77$ and $NECs = .79$.

Like in other questionnaires, the 1st segment of WSQ had demographic variables to see their role as predictor for depression.

Procedure

At each station, a trained Control Room Incharge (CRI) briefed off-duty subjects of both the groups about objective of the study, secrecy of data, items of the BDI-II, way to response the items, scoring, and implications of the study. The BDI was administered to give response in standardized allocated time using a peaceful setting. The severity levels and rate of depression were assessed according to the instructions in the inventory. The practice was exercised twice with an interval of 15 days to eliminate any bias. In 2nd wave, the participants were asked to self-report on the WSQ twice (with an interval) following some specified instructions.

Statistical Analysis

Responses were treated in SPSS ver. 17.0. Categorical variables were processed for rate of severity level of depression. However, independent sample *t*-test was used on normal distribution to assess the statistical difference between the averaged depression score of the groups. Similarly, risk estimates of probable risk factors (*i.e.*, demographic characteristics) were calculated using chi-squared test. A multiple comparison test (Tukey's HSD) was applied to compare the stress score in 3 dimensions of the NECs subscale.

Results

The findings of present study progressed as: subject sampling, comparison between CTWOs and field rescuers in term of severity levels of depression, association between depression scores and demographic variables of CTWOs, comparison in stress score against NECs and control room subscales using WSQ tool, correspondence of stress score against NECs subscale with depression score, comparison in stress score against 3 dimensions of NECs subscale.

Out of the total 45 CTWOs, 29 were male and 16 female (ratio 1.8:1) with averaged age of 28.0 ($SD = 1.7$) years. Moreover, all the recruiters (i.e., 100%) gave response on both BDI and occupational stress questionnaire i.e., WSQ as shown in Figure 1 on subject sampling and response rate. Table 1 indicates statistics of severity levels of depression in the participants. Compared to 9 (20%) field rescuers, 29 (64.4%) CTWOs were found sufferer from mental problem as per criteria (level 3 to 5) of the BDI. Similarly, the depression score ($M = 18.16$, $SD = 6.3$; Range 6-37) in the study group had significant difference from that of control using independent sample t -test on normal distribution [$t(83) = -4.66$, $p = .00$].

Table 1

Severity Levels and Depression Scores in Study and Control Groups (N = 90)

Severity level of depression	Study group		Control group		
	<i>f</i>	%	<i>f</i>	%	
1. Normal	7	15.6	20	44.4	
2. Mild mood disturbance	9	20.0	16	35.6	
3. Borderline depression	19	42.2	7	15.6	
4. Moderate depression	9	20.0	2	4.4	
5. Severe depression	1	2.2	0	0	
Overall depression	29	64.4	9	20.0	
Scores on BDI; <i>M</i> (<i>SD</i>)	18.16	6.32	12.58	4.96)	<i>t</i> (83) = -4.66*

Note. The score ranged 6 – 37 in study group while 5 – 28 in the control.

* $p < .05$.

The 2x2 cross tabulation on categorical data of depression and socio-demographic characteristics (Table 2) revealed comparatively higher rate of depression against males (65%), aged 25-27, education 12 years (66.7%), service 2-3 years (77.8%), and married matrimonial status (67.6%). However, depression showed insignificant association with any of the independent variables after chi square test ($\chi^2 = .048 - 2.34$, $df = 1$, $p > .05$). A CTWO with job experience of 2-3 years had approximately 1.5 folds (95% CI= 0.92 – 2.13) more likelihood of depressive disorder than those of 4-5 years of service ($\chi^2 = 2.34$, $df = 1$, $p = .13$).

Table 2

Categorical Distribution and Risk Estimates Across Baseline Variables of CTWOs (N = 45)

Variable	Depression rate <i>f</i> (%)		Risk estimates RR; 95% CI	χ^2	<i>p</i>
Sex	Male	26(65.0)	1.08; 0.51 – 2.30	-	1.00
	Female	3(60.0)			
Age (years)	25-27	10(66.7)	1.05; 0.67 – 1.65	.05	.83
	28-30	19(63.3)			
Education (years)	12	11(61.1)	0.92; 0.58 – 1.45	.151	.70
	12	18(66.7)			
Service (years)	2-3	14(77.8)	1.40; 0.92 – 2.13	2.33	.13
	4-5	15(55.6)			
Marital status	Unmarried	4(50.0)	0.74; 0.36 – 1.53	-	.30
	Married	25 (67.6)			

Note. In determination of depression rate, individual having score (≥ 17) was considered depressed according to the norms of BDI; the sign (-) under value of χ^2 indicates Fisher Exact test. Uniform degree of freedom (*df*) i.e. 1 throughout the outputs.

Table 3

Stress Score of CTWOs Against Subscales of Workplace Stress Questionnaire (N = 45)

Variable	Workplace Stress Questionnaire				<i>t</i> (88)	<i>p</i>
	NECs		CRE			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Stress score	20.96	8.3	7.82	3.1	24.71	.00

Note. Score range: NECs = 4-47; CRE = 0-16.

Stress score of CTWOs in two subscales of WSQ is presented in Table 3. Evident difference in mean score against NECs subscale and control room subscale was observed on subjecting the responses in SPSS software (20.96 vs. 7.82, respectively; out of total possible 60). Further processing of the data indicated statistically significant difference between the mean values [$t(88) = 24.71, p = .00$].

A consolidated data of occupational stress versus depression is shown in Table 4 employing 2x2 factors in cross tabulation. Here, 89.7% ($n = 26$) depressed respondents reported stress (moderate or high) in NECs subscale, and vice versa. A call handler perceiving low stress had approximately 9-times lowered chances of depression (95% CI: 3.08-26.66) than that of moderate or high stress self-reporters ($\chi^2 = 29.89, p = .00$).

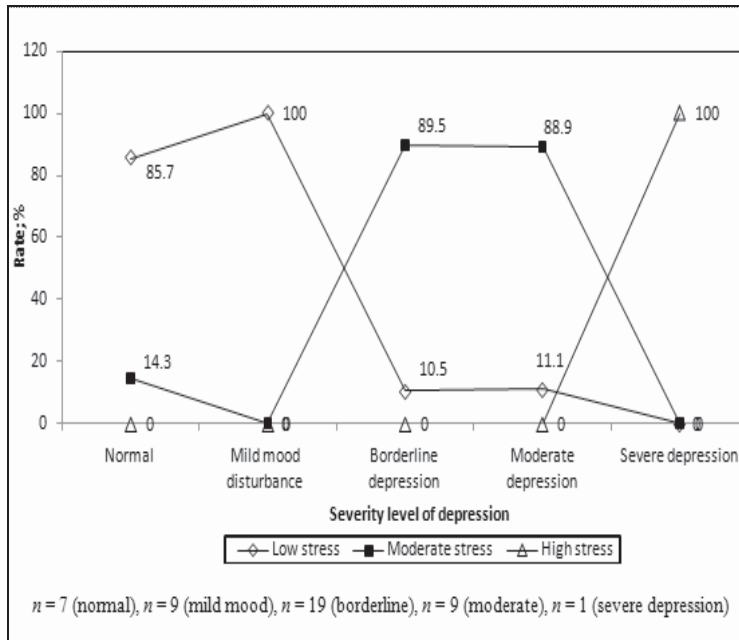


Figure 2. Rate of occupational stress versus severity level of depression in CTWOs.

Table 4

Depression vs. Stress in CTWOs Using Responses in NECs Subscale (N = 45)

Variable	Status of Stress		Risk Estimates RR; 95% CI	χ^2	<i>p</i>
	No <i>f</i> (%)	Yes <i>f</i> (%)			
Status of Depression					
No	15(93.8)	1(6.2)	9.06; 3.08-26.66	29.89	.00
Yes	3(10.3)	26(89.7)			

Note. The category 'No' under status of stress included low stress reporting responders while 'Yes' with moderate or high stress.

Subjecting pooled data of each of the three dimensions of NECs subscale to one-way ANOVA revealed statistical significant difference in the mean scores ($p = .00$) as shown in Table 5. The application of Tukey's HSD test for post hoc multiple comparisons exposed the statistical advantage of personality integration ($M = 9.31$, $SD = 4.10$; out of total 20) over realistic perception or self-evaluation.

Table 5

One-Way ANOVA Between the Three Dimensions in NECs Subscale of WSQ for CTWOs (N = 45)

Dimension/test	<i>M</i>	<i>SD</i>	<i>F(df)</i>	<i>p</i>
Realistic perception (A)	6.67	4.1	17.51 (2, 134)	.00
Personality integration (B)	9.31	4.2		
Self-evaluation (C)	4.80	2.4		
Tukey's HSD	A vs. B (<i>p</i> = .00)	A vs. C (<i>p</i> = .04)	B vs. C (<i>p</i> = .00)	

Note. Tukey's HSD test for multiple comparisons.

Discussion

Activity disinclination (e.g. denial to give participation consent) reflects underlying depressive disorder (American Psychology Association, 2013) and deficit in decision-making capacity (Hindmarch, Hotopf, & Owen, 2013). Similarly, some minimal service length is expected while studying occupational stress-based depression (Dagget, Mola, & Belachew, 2016) as it appears after threshold level.

The higher depression in CTWOs (compared to field rescuers) is the indication of additional distress e.g. heavy work load (Shabnam & Sitwat, 2011). Similarly, depression rate (64.4%) in call handlers of 1122 is comparable to (62.9%) in call attendees of business process outsourcings sector (Jeyapal, Bhasin, Kannan, & Bhatia, 2015; Raja & Bhasin, 2014). The difference seems coping strategies-based. The severity of issue is also clear from the depression rate, 45.7% in the employees of Rescue 1122 (Ahmad, Arshad, & Kausar, 2015).

Outcome of statistically insignificant association between depression and gender is substantiated with findings of other authors (Jeyapal et al., 2015; Suri & Rizvi, 2008) employees of call centers in business sector while contradicts American Psychology Association (2013) stating higher rate in females. It can be interpreted in term of endocrinology-resilience coupling. Similarly, age to level of depression direct proportionality (Tomitaka et al., 2016) may be avoided using adaptive approach. Magnitude of earning power (Randy, Lawrence, & Michael, 2016) determines the height of well-being – a depression inhibitor. Temporal adaptability at workplace declines the risk of depression. Higher prevalence of depression in married employees might be on account of workplace-family conflict (Raziq & Maulabakhsh, 2015).

Bulk inflow of non-emergency calls (NECs) including obnoxious and prank calls (Henderson, 2016; Rescue 1122, 2017; Quick & Waseem et al., 2010) is a potential stressor for depression. It is in accordance with the previous study (Bowling et al., 2017), holding role conflict responsible for the workplace stress and deserves mass awareness (Tahir et al., 2016). However, control room seems equivalent to well-managed environment of telecommunication industry (Daggets et al., 2016; Raziq & Maulabakhsh, 2015) in context of peace of mind.

Present study reported increase in depression level with increase NECs-based occupational stress. The finding is in good agreement with Cho et al. (2013), marking close relationship between depressive disorder and work place stress in female employees. So, this stress is seriously addressed by human resource management via monitoring of resilience (Quick & Henderson, 2016; Vasic & Schmidt, 2017). For better professional output (Hassan, Hussain, Ahmed, Fraz, & Rehmat, 2014), stress-free working condition is necessitated.

Study of a self-reporting questionnaire at dimension level explores the general attitude of the respondent about the core issue. Significant difference in scores against three dimensions of NEC section of the tool show the divergent lines of perception in CTWOs. Comparatively higher score against personality integration of NECs subscale of the questionnaire seems to contradict the self-evaluation dimension of similar work on call centre employees (Suri & Rizvi, 2008) in India. The deviation might be due to more precise monitoring and/or some unrevealed concerns in CTWOs.

Implications

Border line and moderate depression rate in CTWOs necessitates a mechanism (identification of psychological distress followed by treatment) to enhance their output and performance. Furthermore, training of adaptive coping strategies and resilience would be an effective tool in lowering the severity of depression. There is need of new legislation, and community awareness campaign against the troublemakers and non-emergency callers.

Limitations and Suggestions

- Certain constrain limited present work to CTWOs of evening shift of duty roster. Inclusion of other shifts would definitely explore the trends of call abusers in rest of the 16 hrs of the 24-hour cycle i.e., during morning and night shifts.

- Non cooperative attitude of a few CTWOs decreased the overall sample size. Mild psychotherapy is recommended for such operators before commencement of the study.

Conclusions

The study proceeded to see the role of non-emergency calls as an independent risk factor for depression in CTWOs of Rescue 1122, Punjab. Most of the respondents were found at border line while few were sufferer of depression with mild to moderate levels. All the factors except NECs showed insignificant association with the mental problem. A value of remarkably higher stress score was noticed against the NECs using indigenously-developed self-reporting scale on workplace stress (i.e. occupational stress). So, the NECs show their importance as an independent risk factor for depression. The issue necessitates prompt remedial actions to minimize depression in CTWOs otherwise professional output will adversely be affected.

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