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Editorial

The role of sociodemographic factors in suicidal behaviour



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The present issue of *Suicidology Online*, as usual, provides several interesting papers related to the topic of suicide and the spectrum of suicidal behaviour from wide range of countries from South Africa and United States to Germany and Pakistan. The first paper in this issue by Bantjes et al. is on gender differences and medical service utilization among self-harm patients in South Africa and the second one by Kahn and co-workers is about the complex relationship between family and suicidal behaviour. Both papers demonstrate the importance of gender issue, help-seeking behaviour and the role of family in the suicidal process.

Suicide attempters and their family members explain the "reason" of suicidal behaviour in several ways; family conflicts, interpersonal problems, financial breakdown and unemployment are most frequently noted. Although, as showed by the both mentioned papers, family discord can be a contributor of suicidal behaviour, on the other hand, however, studies consequently show that social and particularly family support is associated with decreased likelihood of suicide and suicide attempts (Kleinman and Liu, 2013; Sharaf et al, 2009). It is well-known that suicidal behaviour is very rare in the absence of current major mental disorder and the mentioned psycho-social and family problems as triggers become "*suicidogenic*" mainly in the presence of current major psychiatric disorders, like major depressive episode, substance-use disorders and schizophrenia. Comorbidity with anxiety disorders or borderline personality disorders further increase the risk (Hawton and van Heeringen, 2009; Mann et al, 2005; Rihmer 2007).

Fortunately, suicidal intention rarely develops immediately after the onset of the mentioned mental disorders and this way several weeks, months or years are available to detect the risk of suicide and to implement preventive interventions. Indeed, medical service utilization is very common before suicidal behaviour; two-thirds of suicide victims contact medical care in the last 3 months and more than 80% in the last year prior to suicide. Females seek medical help more frequently than males and general practitioner contact is more common than visiting psychiatrists (Cho et al, 2013; Luoma et al, 2002). As, at least in Western countries, up to one-third of depressed patients die by suicide within 1 year of first seeking psychiatric help (Hunt et al, 2006), our efforts for predicting and preventing suicide can (and should be) further improved. On the one hand, it is well known that suicide attempt is the most powerful predictor of repetition and completion (Hawton and van Heeringen, 2009; Mann et al, 2005; Rihmer, 2007), but on the other hand non-suicidal self-injury is often thought to be only a "manipulative act" primarily for family members. This is a serious misconception, as everyday clinical praxis as well as follow-up studies clearly show that persons with non-suicidal self-injury have a markedly elevated risk of future suicidal behaviour (Klonsky et al, 2014; Coppersmith et al, 2017). The studies of Bantjes et al. and Khan and colleagues, in this issue, demonstrate further evidences that in addition to detect and treat underlying mental disorders, considering socio-demographic factors and family background are also integral parts in the complicated task, called suicide prevention.

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Original Research

Gender differences in epidemiology and medical service utilisation among self-harm patients seeking treatment at an urban hospital in South Africa

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Abstract: Gender differences in patterns of self-harm in developed countries are well documented. Little is however known about gender differences in the epidemiology of self-harm in South Africa (SA) and about gender differences in medical service utilisation among self-harm patients. We set out to investigate gender differences in demographic, socio-cultural, clinical characteristics and medical service utilization of self-harm patients presenting at an urban hospital in SA. Demographic, socio-cultural, and clinical data were collected for 200 consecutive emergency room presentations of self-harm. Bivariate statistical and logistic regression analysis was employed to identify significant gender differences. Males constituted 40.5% of the sample. Male self-harm patients were more likely than women to have dependants, to injure themselves by hanging or laceration, to cite psychiatric illness as the reason for self-harm and to be admitted to an emergency psychiatric ward. Women self-harm patients were more likely than men to use prescription medications, cite family conflict as the precipitant of their self-harm, and to be treated in the emergency room and discharged. The proportion of males in the sample was higher than expected given what is known about gender differences in the prevalence of self-harm in SA. These findings draw attention to how contextual factors such as barriers to accessing health care may influence epidemiological self-harm data collected in hospital settings in low and middle income countries. Data also suggest that hospital based suicide prevention interventions may fail to reach women self-harm patients in SA who do not appear to access hospital care.

Keywords: deliberate self-harm; non-fatal suicidal behaviour; South Africa; epidemiology; gender differences, medical service utilization.

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Gender differences in patterns of self-harm are well documented. A robust body of literature consistently shows that rates of self-harm are higher among women in western and developed countries (Arensman et al., 2008; Kessler, Berglund, Borges, Nock, & Wang, 2005; Klonsky & Muehlenkamp, 2007; Mościcki, 2014; Skegg, 2005) although in the last 15 years, data suggests a decline in the incidence of female self-harm in Europe

(Schmidtke, Bille-Bahe, Kerkhof, & De Leo, 2004) and isolated reports can be found of exceptions to this norm (Ostamo & Lönnqvist, 1994). Research on self-harm in low and middle income countries (LMICs) is comparatively scant. However, studies conducted in Africa (Kebede & Alem, 1999; Kinyanda, Hjelmeland, & Musisi, 2004; Odejide, Williams, Ohaeri, & Ikuesan, 1986; Okasha & Lotaif, 1979) and India (Kumar, Mohan, Ranjith, & Chandrasekaran, 2006) found higher rates of men among individuals who self-harm, while studies from Pakistan report that self-harm is more common

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among women (Khan & Reza, 1998). No studies have been conducted to date focusing on gender differences in epidemiology of self-harm in South Africa (SA). Gender differences in epidemiology of self-harm have public health implications for interventions which seek to curb suicidal behaviour and for understanding the socio-cultural context in which self-harm occurs.

Literature documenting gender differences in patterns of medical service utilisation among self-harm patients is scant, although evidence suggests that the gender of a person engaging in self-harm may influence how their behaviour is appraised and hence may shape the medical care they receive (Canetto, 1997; Lester, 1995; Linehan, 1973). Likewise little attention has been paid to investigating how structural factors within the health care system of LMICs may influence access to care and hence give rise to gender differences in the pattern of medical service utilisation among self-harm patients. It is within this context that we set out to investigate gender differences with respect to demographic characteristics, socio-cultural features, methods of self-harm, nature of injuries sustained, motives and precipitants of the behaviour, and patterns of medical service utilisation among patients presenting for treatment in the emergency room of a hospital in an urban city of SA.

Gender patterns in the epidemiology of self-harm

Although rates of self-harm are typically higher among women, gender differences in patterns of self-harm fluctuate over time and seem to be a function of geographic region, ethnicity, and age. Schmidtke et al. (2004) report that relative proportions of male and female self-harm vary across regions within a country and between different countries. For example, the incidence of self-harm among men has been found to vary greatly across different regions of the UK (Hawton et al., 2007). Similarly, regional variations in rates of male and female self-harm were observed across eight European countries (Arensman et al., 2008). Ethnicity also seems to determine gender differences in patterns of self-harm. For example, a study conducted in a New York City hospital found similar rates of non-fatal suicidal acts among male and female Puerto Rican patients, although this pattern was not observed for other ethnic groups (Fernandez-Pol, 1986). Fewer gender differences in rates of self-harm are reported in community based samples (Andover, Pepper, & Gibb, 2007). Similarly, gender differences in rates of self-harm appear to be less marked in adolescent samples (Evans, Hawton, & Rodham, 2005; Muehlenkamp & Gutierrez, 2004) with gender differences becoming more pronounced as adolescents progress towards adulthood (Sourander et al., 2006). Studies suggest that there are gender differences with respect to method of self-harm, motivation for engaging in this behaviour and intention (Andover, Primack, Gibb, & Pepper, 2010;

Klonsky & Muehlenkamp, 2007). There is, however, evidence to suggest that the most common reason for engaging in self-harm among both genders is affect regulation (Klonsky, 2007). Nock and Kessler (2006) have found significant gender differences with respect to intent, with men who engage in self-harm reporting higher rates of suicidal intent (i.e., a desire to die) than women.

Gender differences have been observed in frequency of repetition of self-harm. Some studies have reported higher rates of repetition among young male adolescents (Gratz et al., 2012; Mørhl & Skandsen, 2012) while other studies report the reverse (Sornberger, Heath, Toste, & McLouth, 2012) and yet other studies report no significant gender difference in rates of repetition among adolescents (Muehlenkamp, Williams, Gutierrez, & Claes, 2009; Bjärehed & Lundh, 2008).

Scholars have speculated about the reasons for gender differences in patterns of self-harm (Mościcki, 1994). This is typically understood in terms of gender roles, cultural norms, societal expectations and attitudes towards self-harm and suicide (Canetto & Sakinofsky, 1998; Hawton, 2000).

Critics have cautioned against over interpreting the significance of gender differences in patterns of self-harm since observed differences with respect to the proportion of women may be an artefact of biased data collection (Whitehead, Johnson, & Ferrence, 1973), for example, the exclusion of data from male-dominated environments such as jails (Bland, Newman, Dyck, & Orn, 1990; Kerkhof & Bernasco, 1990). Scholars have also cautioned that observed gender differences may be influenced by study design and methodological factors such as how self-harm is defined, the time period under investigation (i.e., life-time prevalence versus 12-month prevalence), data collection methods (i.e., self-report questionnaires versus the use of interviews or medical records), the population of interest (i.e., general population versus clinical populations), whether or not community-based or hospital-based samples are used, as well as sample size and whether there is sufficient statistical power to draw meaningful inferences (Whitehead, Johnson, & Ferrence, 1973).

Epidemiology of self-harm in South Africa

In SA, approximately 130 000 suicide attempts occur annually (Burrows & Schlebusch, 2008) although the prevalence of non-suicidal self-injury (NSSI) is less well documented. The epidemiology of self-harm has been remarkably neglected by researchers in SA, with researchers tending to focus on suicidal self-injury (attempted suicide). Furthermore, these studies have typically employed descriptive statistics and presented data in a way that makes meaningful gender comparisons impossible. Consequently, very little is

known about gender patterns of self-harm in the country other than that the behaviour appears to be more common among women.

A hospital-based study of parasuicide conducted among Black South Africans (n=51) found that the majority of patients were women (64.7%) (Naidoo & Pillay, 1993). Similarly, a study conducted of suicide attempters treated in a hospital in Durban (n= 688) found that the majority of participants were women (73%) (Naidoo & Schlebusch, 2013). A study of patients (n=39) admitted to a hospital in George following a suicide attempt reported that the majority of patients were female (72%) (Raubenheimer & Jenkins, 2015). A community-based study drawing on a nationally representative sample (n= 4,351) of South Africans aged 18 years and older found noticeable gender differences with respect to the 12-month prevalence of self-harm; rates of attempted suicide were twice as high among women (3.8%) compared to men (1.8%) (Joe, Stein, Seedat, Herman, & Williams, 2008)

Study setting

Data for this study was collected at a large hospital in an urban city (hereafter referred to as the hospital). The hospital, with almost 900 beds, has more than 43 000 admissions a year and is staffed by more than 500 doctors and 1 400 nurses. The hospital is part of SA's public health care system; a system that is under considerable strain as a result of high rates of HIV, tuberculosis, chronic illness, mental illness, and injury and violence (Mayosi et al., 2012). Resource constraints and poor access to health care services in SA result in many people failing to receive the medical and psychiatric care they need (Harris et al., 2011; Petersen & Lund, 2011).

Method

We set out to investigate gender differences in demographic characteristics, socio-cultural and clinical features, and patterns of medical service utilisation among patients presenting for treatment at the emergency room (ER) of the hospital following an act of deliberate self-harm (DSH). We defined DSH in the same way the term was used in the WHO/Euro Multi-Centre Study on Parasuicide, namely "An act with non-fatal outcome, in which an individual deliberately initiates a non-habitual behaviour that, without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognised therapeutic dosage, and which is aimed at realising changes which the subject desired via the actual or expected physical consequences" (Platt et al., 1994). Data were collected from consecutive patients presenting to the hospital with self-harm between 16 June 2014 and 15 Feb 2015. Over this time there were 220 presentations of DSH, of which 20 were excluded either because they died as a

result of their injuries (5 patients), they had already been included in the study sample on a previous presentation during the study period (5 patients), they left prior to data being captured (1 patient), or their files were missing (9 patients). For the five patients who presented more than once during the study period, their first presentation was used for data capture.

Data collection

The following information was purposefully collected from the medical records of patients by an experienced psychiatric nurse using a data capture form: (1) *Demographic characteristics* (age, gender, home language, religious affiliation, ethnicity, employment status, relationship status, number of dependants, highest level of education, and socioeconomic status (assessed as low (annual family income of ZAR 76 800 or less) or high (annual family income of more than ZAR 76 800)); (2) *Details of self-harm* (time, day and method of self-harm, intention, precipitating factors, evidence of intoxication, whether or not the act was impulsive or premeditated, and history of self-harm); and (3) *Clinical features and medical service utilisation* (nature of injury, Glasgow Coma Scale (GCS) score on admission, Pierce Suicidal Intent Scale (PSIS) score, medical interventions required, level of admission and length of stay in hospital). The PSIS is a clinician administered self-report instrument composed of 12 questions assessing dimensions of suicidal intent, such as the patient's perception of the lethality of their self-harm, efforts to isolate oneself so as to avoid being rescued, writing a suicide note, and regret at having survived the act (Pierce, 1977). PSIS scores range from a minimum of zero to a maximum of 25, with scores of zero to three indicating low intent, four to six indicating moderate intent and scores greater than 11 indicating high suicidal intent. The GCS is a neurological measure of the level of consciousness and is used in emergency medicine and intensive care settings to assess the severity of patients' injuries and monitor their progress. GCS scores vary from three (indicating deep unconsciousness) to 15 (indicating fully alert and conscious).

Data analysis

Data were entered into Statistical Package for the Social Sciences (SPSS v.18) (Norusis, 1990). Descriptive statistics were employed to describe the sample and bivariate statistical methods (Chi square and Fishers' exact tests) were used to determine if there were statistically significant gender differences among the self-harm patients. The independent t-test and z-test were used for between-group analyses of continuous variables. Logistic regression analysis was performed to determine if the following demographic characteristics were associated with gender: socioeconomic status (SES), relationship status, having dependents, level of

education, and employment status. Logistic regression analysis was performed to determine if the demographic characteristics of patients were associated with the method of self-harm, intoxication at the time of self-harm, suicidal

intent, impulsivity, reasons for self-harm, history of self-harm, and whether or not a hospital admission or admission to an emergency psychiatric unit was required. Odds ratios (OR) and 95% confidence intervals (CI) were calculated for each variable, and the threshold for statistical significance was set at $p < .05$.

Results

Sample characteristics

The gender composition of the sample was 59.5% ($n=119$) female and 40.5% ($n=81$) male, in a country where 51% of the population is female. Gender and age distribution of the sample together with the mean ages and standard deviations are given in Table 1. Gender differences in the age distribution were not statistically significant ($z=0.735$, $p=0.464$)

Table 1

Gender and age distribution of self-harm patients

	<12 years	12-17 years	18-29 years	30-39 years	40-49 years	50-59 years	60-69 years	>70 years	Mean (standard deviation)
Male $n=81$	0	5	38	16	14	4	3	1	32.42 years (13.073)
Female $n=119$	0	16	57	17	12	10	5	2	30.94 years (14.766)
Total ($N=200$)	0	21	95	33	26	14	8	3	31.54 years (14.09)

Note. Independent z-test was used for between-group analyses of the continuous variable: Mean age (years).

Gender differences in demographic characteristics

Demographic features of the sample by gender are shown in Table 2. The majority of the sample were Coloured (44%), English speaking (59.5%), Christian (32%), single (72.5%), without dependants (62%), with secondary level education (41.5%), unemployed (56%) and were of low socio-economic status (SES) (55%). Four of the women were pregnant. No statistically significant gender differences were observed with

respect to ethnicity, home language, religious affiliation, relationship status, level of education, employment status, and SES. Statistically significant gender differences were however observed with respect to having dependants ($\chi^2=9.95$, $p=0.019$), with males approximately 2.2 times more likely than women to have no dependants (OR=2.224, 95% CI=1.135–4.382).

Table 2

Demographic characteristics of DSH patients, by gender

		Total		Male		Female		χ^2	d.f	p
		N	%	^a n	%	^b n	%			
Ethnicity	Coloured	88	44%	32	39.51%	56	47.06%	9.048	4	0.06
	Black	66	33%	25	30.86%	41	34.45%			
	White	27	14%	11	13.58%	16	13.45%			
	Asian	8	4%	7	8.64%	1	0.84%			
	Not known	11	6%	6	7.41%	5	4.20%			
Home Language	English	119	59.50%	49	60.49%	70	58.82%	3.63	4	0.459
	isiXhosa	37	18.50%	12	14.81%	25	21.01%			
	Afrikaans	37	18.50%	17	20.99%	20	16.81%			
	isiZulu	2	1.00%	0	0.00%	2	1.68%			
	Not known	5	2.50%	3	3.70%	2	1.68%			
Religious affiliation	Christian	64	32.00%	24	29.63%	40	33.61%	2.02	4	0.732

	Other not specified	43	21.50%	19	23.46%	24	20.17%			
	Islam	26	13.00%	11	13.58%	15	12.61%			
	Hindu	1	0.50%	1	1.23%	0	0.00%			
	Not known	66	33.00%	26	32.10%	40	33.61%			
Relationship status	Single	145	72.50%	62	76.54%	83	69.75%	6.83	5	0.234
	Married	33	16.50%	9	11.11%	24	20.17%			
	Divorced	11	5.50%	3	3.70%	8	6.72%			
	Widowed	6	3.00%	4	4.94%	2	1.68%			
	In a relationship	4	2.00%	2	2.47%	2	1.68%			
	Not known	1	0.50%	1	1.23%	0	0.00%			
Dependants	No dependents	124	62.00%	59	72.84%	65	54.62%	9.95	3	0.019*
	Dependents	69	34.50%	20	24.69%	49	41.18%			
	Pregnant	4	2.00%	0	0.00%	4	3.36%			
	Not known	3	1.50%	2	2.47%	1	0.84%			
^c Level of education	Primary schooling	60	30.00%	19	23.46%	41	22.65%	3.174	4	0.529
	Secondary schooling	83	41.50%	37	45.68%	46	25.41%			
	Tertiary education	27	13.50%	13	16.05%	14	7.73%			
	Post grad degree	5	2.50%	2	2.47%	3	1.66%			
	Not known	25	12.50%	10	12.35%	15	8.29%			
Employment status	Unemployed	112	56.00%	44	54.32%	68	57.14%	4.67	4	0.323
	Employed	41	20.50%	22	27.16%	19	15.97%			
	Student	38	19.00%	12	14.81%	26	21.85%			
	Retired	4	2.00%	1	1.23%	3	2.52%			
	Not known	5	2.50%	2	2.47%	3	2.52%			
^d Socioeconomic status (SES)	Low Socio-economic status (annual household income = ZAR 0 to ZAR 76 800)	110	55%	44	54.3	66	55.5	0.394	2	0.821
	High Socio-economic status (annual family income of ZAR 76 801 to ZAR 2 457 601)	80	40%	32	39.5	48	40.3			
	Not known	10	5%	5	6.2	5	4.2			

Note. N = 200. ^an = 81. ^bn = 119. ^cPrimary school = Grade 1 to 7 in the United States (US); Secondary school = Grade 8 to 12 in the US; Tertiary school = a Diploma or degree from a University after Grade 12 has been completed. ^dSocioeconomic status = at the time of the study 1 dollar was equal to approximately 11 ZAR. * $p < .05$

Logistic regression analysis was performed in order to test the extent to which gender is a function of the following demographic variables: SES, relationship status, having dependents, level of education, and employment status. As can be seen in Table 7, self-harm patients who were unemployed were approximately 5 times more likely to be women, when controlling for other demographic factors.

Methods of self-harm

Details of the self-injurious behaviour by gender are presented in Table 3 along with information about the method used, whether or not patients reported

substance use at the time of injury, stated intention when engaging in the behaviour, whether or not the act was impulsive or premeditated, and the precipitating reasons for the self-harm.

The most common methods of self-harm were prescription medication overdose (58%), non-prescription medication overdose (35%), lacerations (9.5%) and ingestion of poisons (8.5%).

Forty-three individuals (21.5%) used multiple methods of self-harm. Significant gender differences were observed with respect to use of prescription medication, lacerations and hanging as methods of self-harm. Women were approximately 2.8 times more

likely than men to use prescription medications as a method of self-harm ($\chi^2=12.225$, $p=0.001$, $OR=2.8$, 95% $CI=1.499-5.252$), males were 3.6 times more likely to present with lacerations ($\chi^2=6.79$, $p=0.013$, $OR=3.6$, 95% $CI=1.202-11.218$). Men were also 5.5 times more likely to hang themselves than females ($\chi^2=7.65$, $p=0.008$, $OR=5.45$, 95% $CI=1.321-25.910$).

Logistic regression analysis was performed to determine if demographic characteristics (i.e., gender, SES, relationship status, having dependents, level of education, and employment status) were associated with whether the method of self-harm involved tissue damage (i.e., lacerations, hanging or gunshot wounds) or self-poisoning. As can be seen in Table 7, men were approximately eight times ($OR=7.82$, 95% $CI=2.53-24.1$, $p=.000$) more likely than women to use some form of tissue damage as a method of self-harm compared to self-poisoning, when controlling for the other demographic characteristics.

Substance use at the time of self-harm

A total of 19.5% of the sample reported substance use at the time of self-injury, with no significant gender differences found ($\chi^2= 2.34$, $p=0.126$). Logistic regression analysis was performed to determine if demographic characteristics were associated with the use of substances at the time of self-harm. As seen in Table 7, patients with no dependents were approximately four times ($OR=3.77$, 95% $CI=1.17-12.2$, $p=.026$) more likely to have used substances at the time of self-harm, when controlling for other demographic characteristics.

Stated intention for self-harm

The most commonly reported intentions were: to die (32.5%), to communicate something (29%), to regulate the behaviour of someone else (21.5%) and to escape a situation (20%). Only 7.5% of patients reported that their self-harm was accidental. No statistically significant gender differences were observed with respect to patients' stated intention for engaging in self-harm. Of the sample, 39.5% reported that they had more than one intention when engaging in the act of self-harm, with statistically significant differences

between the number of men ($n=25$) and women ($n=54$) reporting multiple intentions. Women were approximately 1.8 times more likely to report multiple intentions ($\chi^2=4.248$, $p=0.039$, $OR=1.861$, 95% $CI=0.986-3.523$).

Logistic regression analysis was performed to determine if demographic characteristics were associated with the stated intention being "to die". As seen in Table 7, patients who were not in a relationship ($OR=3.20$, 95% $CI=1.05-9.76$, $p=.041$) and who were unemployed ($OR=3.71$, 95% $CI=1.13-12.1$, $p=.030$) were more likely to report that they intended "to die" as a result of their self-harm, when controlling for other demographic characteristics.

Impulsivity

A total of 47 patients (23.5%) reported that their self-harm was an impulsive act. No statistically significant differences were observed with respect to the number of men ($n= 15$) and the number of women ($n=32$) reporting their self-harm was impulsive ($\chi^2=2.879$, $p=0.18$, $OR=0.618$, 95% $CI=0.770-3.429$).

Logistic regression analysis showed that none of the demographic characteristics were associated with impulsive acts of self-harm (see Table 7).

Stated reason for self-harm

The most commonly reported reasons for engaging in self-harm were family conflict (35%), marital/romantic relationship difficulties (31%) and financial concerns (20%). Statistically significant gender differences were observed with respect to family conflict being cited as a reason for engaging in self-harm ($\chi^2=4.927$, $p=0.034$) with women being two times more likely to cite family conflict as the reason for their behaviour ($OR=2.0$, 95% $CI=1.034-3.888$). Similarly, gender differences were observed with respect to patients citing psychiatric symptoms (i.e. insomnia, anxiety or depression) as the reason for engaging in self-harm ($\chi^2=4.508$, $p=0.034$), with men being approximately 2.5 times more likely than women to cite psychiatric symptoms as the reason for self-harm ($OR=2.477$, 95% $CI=0.978-6.35$).

Table 3

Nature of self-harm, by gender

Method	Total N	%	Male		Female		χ^2	p-value	OR	95% CI
			a n	%	b n	%				
Prescription medication	116	58.00%	35	43.21%	81	68.07%	12.225	0.001**	2.802	1.499-5.252
Non-prescription medication	70	35.00%	24	29.63%	46	38.66%	1.726	0.189	1.487	0.785-2.863
Laceration	19	9.50%	13	16.05%	6	5.04%	6.79	0.013*	3.6	1.202-11.218
Ingestion of poison	17	8.50%	9	11.11%	8	6.72%	1.19	0.28	1.73	0.580-5.219
Hanging	13	6.50%	10	12.35%	3	2.52%	7.65	0.008**	5.45	1.321-25.910
Unsure	1	0.50%	0	0.00%	1	0.84%				

	Burn	1	0.50%	1	1.23%	0	0.00%			
	Asphyxiation	2	1.00%	1	1.23%	1	0.84%		1 [†]	
	Throwing oneself in front of a train	3	1.50%	3	3.70%	0	0.00%			
	Jumping from height	1	0.50%	1	1.23%	0	0.00%			
	Gunshot	0	0.00%	0	0.00%	0	0.00%			
	More than one method	43	21.50%	16	19.75%	27	22.69%	0.246	0.62	0.839 0.395-1.772
Intoxication	Yes	39	19.50%	20	24.69%	19	15.97%	2.34	0.126	1.726 0.807-3.697
	No	161	80.50%	61	75.31%	100	84.03%			
Intention	To Die	65	32.50%	30	37.04%	35	29.41%	1.277	0.258	1.412 0.742-2.69
	To communicate something (e.g. Distress)	58	29.00%	22	27.16%	36	30.25%	0.224	0.636	1.163 0.594-2.285
	To regulate the behaviour of someone else	43	21.50%	12	14.81%	31	26.05%	3.605	0.058	2.026 0.918-4.530
	To escape a situation	40	20.00%	13	16.05%	27	22.69%	1.328	0.283	1.535 0.698-3.409
	To regulate emotional state	21	10.50%	6	7.41%	15	12.61%		0.348	
	Accidental	15	7.50%	6	7.41%	9	7.56%			1 [†]
	Not Known	16	8.00%	8	9.88%	8	6.72%			
	More than one intention	79	39.50%	25	30.86%	54	45.38%	4.248	0.039*	1.861 0.986-3.523
Impulsive act	Yes	47	23.50%	15	18.52%	32	26.89%	1.879	0.18	1.618 0.770-3.429
	No	153	76.50%	66	81.48%	87	73.11%			
	Not known	0								
Reasons	Family Conflict	70	35.00%	21	25.93%	49	41.18%	4.927	0.034*	2 1.034-3.888
	Marital/Romantic relationship issues	62	31.00%	25	30.86%	37	31.09%	0.001	0.973	1.011 0.525-1.949
	Financial Concerns	40	20.00%	15	18.52%	25	21.01%	0.187	0.666	1.17 0.543-2.539
	Psychiatric Illness	25	12.50%	15	18.52%	10	8.40%	4.508	0.034*	2.477 0.978-6.351
	Academic Concerns	9	4.50%	2	2.47%	7	5.88%		0.317 [†]	
	Bereavement	8	4.00%	2	2.47%	6	5.04%		0.477 [†]	
	Medical Illness	15	7.50%	6	7.41%	9	7.56%			1 [†]
	Trauma	3	1.50%	2	2.47%	1	0.84%		0.567 [†]	
	Legal problems	2	1.00%	2	2.47%	0	0.00%			
	Isolated / lack of social support	9	4.50%	4	4.94%	5	4.20%			1 [†]
	Interpersonal conflict	1	0.50%	0	0.00%	1	0.84%			
	Pregnancy	3	1.50%	0	0.00%	3	2.52%			
	Not Known	22	11.00%	13	16.05%	9	7.56%			

Note. N = 200. ^an = 81. ^bn = 119. Chi-square statistics were calculated for variables where the observed frequency was more than five. [†]Fisher's exact test was used in cells where the expected frequency was less than five. * p < .05. ** p < .01.

Logistic regression analysis was performed to determine if demographic characteristics were associated with interpersonal reasons for self-harm (see Table 7). Patients in a relationship (OR=3.17, 95% CI_1.11-9.02, p=.031) and having a secondary level of education (OR=3.21, 95% CI=1.08-9.55, p=.037) were more likely to report interpersonal reasons for self-harm, when controlling for other demographic variables.

History of self-harm

Seventy-seven patients (38.5%) reported a history of self-harm, the frequency of which is given by gender in Table 4. There were no statistically significant gender differences with respect to history of self-harm ($\chi^2=0.003$, p=0.956, OR=1.016, 95% CI=0.546-1.893).

Table 4

History of self-harm, by gender

		Total		Male		Female	
		N	%	^a n	%	^b n	%
History of DSH	No previous history	59	29.50%	23	28.40%	36	30.25%
	1 previous attempt	38	19.00%	13	16.05%	25	21.01%
	2 or more previous attempts	39	19.50%	18	22.22%	21	17.65%

Note. N = 200. ^an = 81. ^bn = 119.

Logistic regression analysis was performed to determine if a history of self-harm was associated with demographic characteristics (see Table 7). Patients who reported a higher level of education were five times more likely (OR=4.97, 95% CI=1.79-13.8, p=.002) to report a history of self-harm, when controlling for other demographic variables.

Medical service utilisation

No medical interventions were required for 37.5% of patients (38.3% of men and 37% of women). No significant gender differences were observed between patients requiring medical intervention and those who

did not ($\chi^2=0.035$, $p=0.852$). The range of medical interventions required by self-harm patients is indicated in Table 5. The most common medical interventions were intra-venous medical treatment (54%), activated charcoal (13%) and intubation and ventilation (11%). Significant gender differences were observed with respect to medical treatment, with women being approximately three times more likely to require activated charcoal ($\chi^2=5.61$, $p=0.018$, OR=3.26, 95% CI=1.094-10.377) as would be expected given the higher incidence of self-poisoning among women in our sample.

Table 5

Range of medical interventions required by self-harm patients

	Total		Men		Women		χ^2	p		
	N	%	^a n	%	^b n	%				
No intervention	75	37.50%	31	38.27%	44	36.97%	0.035	0.852		
IV or oral medical treatment	108	54.00%	44	54.32%	64	53.78%	0.006	1		
Activated charcoal	26	13.00%	5	6.17%	21	17.65%	5.61	0.018*	3.257	1.094-10.377
Intubation and ventilation	22	11.00%	10	12.35%	12	10.08%	0.252	0.616		
Suturing	7	3.50%	5	6.17%	2	1.68%	2.88 ^t	0.09		
Surgical procedure	9	4.50%	7	8.64%	2	1.68%	2.88 ^t	0.122		
Dialysis	9	4.50%	3	3.70%	6	5.04%	0.201 ^t	0.741		
Urinary catheter	3	1.50%	1	1.23%	2	1.68%	0.065 ^t	1		
Dressing of burn wound	1	0.50%	1	1.23%	0	0.00%				

Note. N = 200. ^an = 81. ^bn = 119. ^tFisher's exact test was used in cells where the expected frequency was less than five: activated charcoal.

* $p < .05$.

The number of self-harm patients requiring admission to the hospital, as well as the level of admission and the total and average length of stay, is presented in Table 6. Of the 200 patients, 68 (34%) were treated in the ER and discharged. Statistically significant differences were observed between the number of men (n=18) and women (n=50) who did not require a hospital admission ($\chi^2=8.415$, $p=0.004$), with women approximately 2.5 times more likely to be treated in the ER and discharged (OR=2.536, 95% CI=1.282–5.055).

Logistic regression analysis showed that there was no association between requiring a hospital admission and demographic characteristics (see Table 7).

The mean length of stay in the hospital for patients requiring admission (n=126) was 5.27 day (SD=10.95, range=2-100, total number of days=1 053). The mean length of stay for men requiring admission (n=63) was 7.05 days (SD=7.27, range=2-35, total number of days=490) while for women (n=69) it was 4.73 days (SD=12.83, range=2-100, total number of days=563). No statistically significant gender differences were

observed with respect to the length of hospital admission for men or women ($t=0.717$, $p=0.475$). No statistically significant gender differences were observed with respect to the proportion of patients admitted to an Intensive Care Unit ($p=1.00$), short stay medical unit ($\chi^2=0.601$, $p=0.438$) or general medical/surgical ward ($p=1.00$).

Slightly less than half of the patients (42%) required admission to the emergency psychiatric unit once their physical injuries had been treated. There was a statistically significant difference between the number of men ($n=41$) and the number of women ($n=43$) admitted to the emergency psychiatric unit, with men 1.8 times more likely to require a psychiatric admission ($\chi^2=4.15$, $p=0.04$, $OR=1.81$, $95\% CI=0.980-3.353$).

Table 6
Level of hospital admission required and duration of stay in hospital, by gender

	Number of patients			Total number of days spent in each ward			Mean number of days (standard deviation)		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Treated in casualty and discharged	68	18	50	-	-	-	-	-	-
Admitted to short stay medical unit	51	23	28	140	72	68	2.75 (1.58)	3.13 (1.30)	2.43 (1.72)
ICU or high care	14	6	8	70	31	39	5.00 (3.98)	5.2 (3.53)	4.88 (4.28)
Admitted to long-stay medical or surgical ward	15	6	9	304	60	244	20.27 (28.83)	10 (7.87)	2.11 (35.03)
Admitted to emergency psychiatric unit	84	41	43	539	327	212	6.42 (5.57)	8 (7.16)	4.93 (2.67)

The GCS mean of all self-harm patients was 13.45 ($SD=3.299$), while for men it was 12.81 ($SD=3.907$) and women 13.85 ($SD=2.791$). No significant gender differences were found between the GCS scores of male and female self-harm patients ($t =1.3605$, $p=0.175$). Although it is standard practice for the Pierce Suicidal Intent Scale (PSIS) to be administered to all self-harm patients treated at the hospital, we found that these

were only done for 106 (53%) of the patients (35 men and 71 women). Men were approximately 2 times more likely than women not to have their PSIS assessed ($\chi^2=5.24$, $p=0.030$, $OR=1.94$, $95\% CI=1.06-3.59$). The mean PSIS score for the sample was 9.38 ($SD=4.97$). The mean PSIS score for men was 10.5 ($SD=5.20$) and women 8.85 ($SD=4.80$), which are not significantly different ($t=1.58$, $p=0.117$).

Table 7
Results of Logistic Regression Analyses

Predictors	^a Method of self-harm		^a Intoxication at the time of self-harm		^a Suicidal self-injury		^a Impulsive act		^a Interpersonal reasons for self-harm		^a History of self-harm		^a Hospital admission required		^a Admission to an emergency psychiatric unit		^b Gender	
	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P
SES	.526 (.191-1.45)	.215	1.042 (.460-2.36)	.921	.649 (.312-1.35)	.247	.676 (.312-1.47)	.322	1.106 (.550-2.22)	.778	1.51 (.789-2.91)	.213	.749 (.404-1.39)	.360	1.03 (.537-1.98)	.927	.846 (.444-1.61)	.612
Relationship Status	.476 (.082-2.76)	.408	1.07 (.296-3.88)	.916	3.20 (1.05-9.76)	.041*	.823 (.279-2.42)	.723	3.17 (1.11-9.02)	.031*	1.255 (.471-3.34)	.649	.588 (.237-1.46)	.251	.957 (.356-2.57)	.931	.765 (.288-2.03)	.591
Dependents	2.25 (.490-10.3)	.298	3.77 (1.17-12.2)	.026*	.947 (.399-2.25)	.901	1.01 (.412-2.50)	.974	.829 (.355-1.94)	.666	.986 (.440-2.21)	.973	1.08 (.506-2.30)	.845	.464 (.202-1.06)	.070	.387 (.174-.861)	.387
Level of education (overall) [base = Primary school]		.680		.129		.158		.280		.049		.001		.310		.624		.456
Level of education (Secondary school)	.520 (.118-2.29)	.387	2.60 (.949-7.12)	.063	1.48 (.486-4.51)	.490	.511 (.210-1.24)	.139	3.21 (1.08-9.55)	.037*	4.00 (1.82-8.88)	.001**	.978 (.477-2.00)	.951	.737 (.342-1.59)	.437	1.83 (.681-4.92)	.231
Level of education (Tertiary school)	.599 (.143-2.51)	.484	1.01 (.327-3.12)	.988	.659 (.241-1.81)	.417	.920 (.297-2.85)	.885	1.36 (.499-3.69)	.550	4.97 (1.79-13.8)	.002**	1.99 (.736-5.39)	.175	.636 (.230-1.76)	.383	1.32 (.515-3.39)	.562
Employment status (overall)		.738		.092		.095		.325		.651		.463		.423		.095		.019
Employment status (Unemployed)	.617 (.102-3.74)	.600	.726 (.212-2.49)	.610	3.71 (1.13-12.1)	.030*	.474 (.172-1.30)	.148	.716 (.278-1.84)	.488	1.24 (.502-3.07)	.640	1.10 (.453-2.69)	.828	.476 (.192-1.18)	.110	4.71 (1.60-13.9)	.005**
Employment status (Employed)	1.197 (.332-4.322)	.784	.272 (.071-1.04)	.057	1.72 (.674-4.37)	.258	.493 (.147-1.65)	.251	.590 (.189-1.84)	.364	.710 (.243-2.08)	.531	.635 (.224-1.81)	.395	1.10 (.382-3.14)	.865	2.13 (.910-4.99)	.081
Gender (Female) [base = male]	7.82 (2.53-24.1)	.000**	1.16 (.519-2.60)	.716	1.39 (.677-2.85)	.370	1.90 (.861-4.20)	.112	1.50 (.733-3.06)	.267	1.13 (.578-2.23)	.715	.941 (.497-1.78)	.851	1.48 (.758-2.89)	.251	_____	_____

Note. ^aPredictors: Socioeconomic status, Relationship status, Dependents, Level of education, Employment status, Gender. ^bPredictors: Socioeconomic status, Relationship status, Dependents, Level of education, Employment status. *p<.05, **p<.01, ***p<.001.

Discussion

Statistically significant gender differences were not observed with respect to the proportion of men and women in the sample of self-harm patients. Likewise, men and women were remarkably similar with respect to demographic characteristics and clinical features. The only significant demographic difference between male and female DSH patients was that men were approximately 2.6 times more likely than women to have dependents. This finding suggests that, among our sample, having dependents was a protective factor against self-harm for women but not for men. This is consistent with other studies which found that having children protects women against self-harm (Uggla & Mace, 2013; De Winter, Leezer, & de Mequita, 2014)

Gender differences were noted with respect to method of self-harm. Male DSH patients were approximately 5.5 times more likely than women to injure themselves by hanging and 3.6 times more likely to cut themselves. By contrast women were approximately 2.8 times more likely to use prescription medications as the method of self-injury. Our findings are consistent with studies that show that methods of self-harm are a function of gender, with men favouring methods of self-harm that entail tissue damage (such as hanging and laceration) and women opting for self-poisoning (Denning, Conwell, King, & Cox, 2000; Hawton, 2000; Hawton & Heeringen, 2009).

Rates of admissions to medical and surgical units were also not statistically different for men and women. Women were however 2.5 times more likely to be treated in the ER and discharged while men were approximately 1.8 times more likely to be admitted to an emergency psychiatric unit. Women were also 2.2 times less likely to have their PSIS assessed. This apparent gender difference in management of self-harm patients warrants more careful analysis and cannot be accounted for with the data we collected. The finding is, however, interesting in the light of literature which suggests that the gender of the person engaging in suicidal behaviour influences how others appraise the act (Canetto, 1997; Lester, 1995; Linehan, 1973), which may influence clinical management of self-harm patients depending on their gender.

Our findings seem incongruent with reports that rates of self-harm are twice as common among women in the general population of SA (Joe et al., 2008) and with other hospital-based studies which suggest that women constitute a significantly higher proportion of self-harm patients in the country (Naidoo & Pillay, 1993; Naidoo & Schlebusch, 2013; Raubenheimer & Jenkins, 2015). Our findings also seem incongruent with reports suggesting that men are more likely to engage in methods of self-harm which have a higher lethality and hence will require higher levels of medical intervention than women following self-harm. One

possible explanation is that the similarities observed between men and women with respect to the seriousness of their injuries may be a function of the country's public health care system. Within SA's health care system, access to medical care is difficult and individuals who engage in less potentially lethal forms of self-harm may never seek medical treatment. There is a high demand for emergency care within the hospital where our study was conducted and patients whose injuries are not life threatening might wait for six to eight hours to receive medical attention. It is possible that individuals who self-harm but who only sustain minor injuries (regardless of their level of emotional distress and their level of suicidal intent) may never arrive in the hospital or may leave the hospital before receiving treatment and are thus not reflected in our data. This is an issue in need of further attention, particularly because of the implications it may have for gender inequality in the care received by female self-harm patients. This finding also suggests that hospital based suicide prevention interventions may fail to reach the significant group of female patients who self-harm but do not present for treatment at hospitals.

The way in which self-harm data from LMICs may be influenced by macro-level factors, such as the delivery of care within the health system or barriers to accessing medical care, has not received much attention in the literature. Attempts to explain gender differences in patterns of self-harm in LMICs, which only focus on gender roles and cultural factors, may ignore important structural factors such as resource allocation and the organisation of care within hospitals.

The fact that data for this study was collected from one urban hospital is a limitation. It would be helpful to extend this work to hospitals in other local cities and rural areas to establish if similar patterns are observed.

Conclusion

On the surface our data appear to be congruent with studies from other LMICs which report that rates of self-harm among men are higher than those typically reported in high income countries. However, the significant gender similarities observed in our data suggest that gender patterns of self-harm cannot be understood simply as a function of gender roles and cultural factors within the country. We have suggested that our findings might at least in part be a function of the organisation of care and barriers to accessing medical attention within the country's health care system. This argument highlights the importance of exercising caution when interpreting data on gender differences in patterns of self-harm among patients seeking treatment in hospitals in LMICs. It is possible that hospital based studies in countries where medical resources are scarce and where there are barriers to accessing medical care are only representative of the

most medically serious acts of self-harm and cannot be meaningfully compared to rates reported in high income, well-resourced settings.

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Original research

Family and Suicidality: An Exploration of Relationship of Familial Problems with Suicidality in Pakistan

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Abstract:

Background: Since, Durkheim's empirical study on suicide, a trend in academic spheres has now been emerged to deal with issues like suicide on societal grounds that had previously been considered as a result of strictly personal and dispositional patterns (Germov, 2002; Kendall, 2007). Apart from some developed nations (where suicide is now treated on empirical grounds) a general conception about suicide in developing countries like Pakistan still revolves around certain person's specific explanations. Random governmental reports and non-profit agencies, advance statistics accumulate the rising ratio and trends of suicide but rarely lead to systematic and cumulative empirical generalization about the nature and actual underpinnings of suicide in the country.

Focus: The study has explored certain social problems, specifically familial or domestic issues that compel individuals to commit such an extreme act of self-annihilation.

Methodology: The study was planned within a qualitative framework. A detailed literature review and content analysis complemented by data from the field interviews had been undertaken to arrive at certain possible explanation of suicide in Pakistani context.

Findings: The study has found domestic problems such as tension between parents, quarrelling, changes in value system of family, and discord with parents, familial rejection, are some major causes of suicide and other related issues.

Keywords: suicide, family, suicidal behavior, suicide attempt, parents

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Introduction

Among the classical sociological thinkers, Emile Durkheim has been the first one who dealt with the issue of suicide within a social context empirically (Germov, 2002). Earlier conceptions and approaches towards suicide revolved around a certain set of personal characters or dispositional

patterns that tended individuals to commit such acts of self-annihilation. Surprisingly, the same mind-set is still operative in the general masses that views suicide as a complete personal experience backed by purely personal and psychological problems. In contrast to such a traditional view point, sociological theories, with special focus on Durkheim's frame of reference can be used to understand the problem of suicide as a product of destabilized social and cultural milieu. In this regard, Durkheim's contention was his belief that a high

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suicide rate was symptomatic of large scale societal problems (Kendall, 2007).

Suicidal ideation prevails at an alarming rate within the contemporary youth. Such ideation often finds their manifestations in terms of deliberate self-harm, suicidal plans & threats, thoughts and actual suicide incidences in the present-day world. In line with Durkheim's contention, a single dispositional approach is thus not capable of bringing forth a holistic explanation for suicide, rather a multiple-factor approach tends to yield the best possible explanation for this extreme act of self-destruction. As is evident from a large body of existing literature, multiple factors such as depression, low self-esteem, family and other socio-cultural factors are usually at a constant interplay that results in suicide and other related behaviors (Evans, Hawton & Rodham, 2004; Samaritans, 2013).

Family has traditionally been a binding force among humans and a rich source of physical, social and psychological support. Strong family bonds are important to human life. It produces the environment of intimacy, love and emotional stability which are significant to a healthier human society (DeFrain, Brand, Friesen & Swanson, 2008). On the contrary, familial problems have also been found to be strong predictors of suicide and related behaviors (Samaritans, 2012, 2013). A body of research suggests that domestic skirmishes such as hostility, quarrelling, scapegoating, verbal and physical abuse, separation, marital issues and persistent tension at home are the major precursors of Suicide behavior (Kosky, Silburn & Zubrick, 1990; The Australian Psychological Society, 1999), parental psychopathology such as abnormal behavior and habits related to parents are key aspects leading to suicidal behaviors among youth (Joffe et al., 1988).

Besides, Quality of parent-children relation such as lack of parental support, poor relationship between parents and children, disagreements within family (Gould et al., 1996; Wagner, Cole and Schwartzman, 1995) as well as experiencing the loss of a parent or close caregiver through death or divorce promotes suicidality among youth (Maskill et al., 2005). The style of parental supervision and family discord further matters in suicidal behavior (Allison et al., 1995; Wagner, Cole and Schwartzman, 1995). Research also suggests that value system and any changes in it within families contribute to suicide and related behaviors. In this regard, families with rigid value system are significant source of suicide in adults (Portes et al., 2002).

Research data regarding suicide suggest that suicide and related issues are severe and at a constant rise. Each year more than one million people die by

suicide globally (Kocadas & Ozgur, 2011). Current statistics show that a suicide occurs every forty seconds. Similarly, round about 14% of general population have suicidal ideation (Samaritans, 2013). The futuristic version of current suicidal scenario as per credible research studies anticipate approximately 1.53 million people to be perished by 2020. Hence, these statistics also point towards a twofold increase in the current rates of suicide attempts i.e. from 10 to 20 times. It further implies that in every 20 seconds a person would die by committing suicide (Bertolote and Fleischmann, 2002).

The issue of suicide has been grabbing attention due to its consistently increasing rates worldwide. It has been made as a subject matter by mass media, civil society and academicians all alike. Nonetheless, an accurate picture of the problem as argues (Khan, 2003), is still to be drawn mainly because data collection and reporting are significantly affected due to the increasingly sensitized nature of suicide or other related behaviors.

Despite the fact that no or less thoughtful attention has been given to the field of suicide, existing studies (Newspaper articles, research articles and newspaper reports) whatsoever depict a gruesome and consistently escalating portrait of the problem in Pakistan. Recent reports estimate that there were 1,153 attempted suicides across the country (year), 2,131 suicides in 2011 with five or six teenagers attempting suicide every day in Karachi. In 2002, the World Health Organization estimated over 15,000 suicides being committed in Pakistan annually while another study estimates the annual suicide numbers that are about 5,000 to 7,000. In addition, there are approximately 50,000 to 150,000 cases of attempted suicides in Pakistan where majority of suicides and attempted suicides are in people under the age of 30 years (Ebrahim, 2013).

Theoretical Framework

Centuries back, Emile Durkheim started to explain suicide from sociological point of view. In his opinion, suicide wasn't solely as an individual act; instead, various structures of society were responsible for making an individual suicidal. These structures in particular include family, religion and marriage. These structures are functional to society, and any problem observed in the mentioned structures makes them dysfunctional. Concomitantly, individuals are deprived from psychological satisfaction provided by the mentioned structures leading to suicidality (Ritzer, 2011). Later on, various researchers followed the structural functional pattern of explaining suicidality, and repeated the results (Maskill et al.,

2005). In a similar context, the current study explains suicide from structural functional point of view as mentioned by Emile Durkheim i.e. family is a structure which fulfils needs of an individual. Thus, any problem within family makes the family dysfunctional which increases the vulnerability to suicide and related behaviors.

Purpose of the study

This paper aims to explore the role and nature of certain domestic issues including problems existed in familial life leading to suicidality among youth. The study is delimited to Malakand Division, Khayber Pakhtunkhwa, Pakistan.

Methods and Procedures

This study has been planned within a pure qualitative research design specifically thematic research design, depending mainly on textual representation of information obtained from the field as well as literature. It has utilized a qualitative method of sampling i.e. non-probability sampling whereby purposive sampling has been made in order to select samples from the population. In this regard, a total of 35 (20 male and 15 female) were identified from hospital records in Batkhela, Chakdara and Timergara, Khyber Pakhtunkhwa, Pakistan. Hospitals located in Batkhela and Chakdara provided the records of suicide attempts during the span of January, 2011 to April, 2013 while the hospital in Timergara provided records of suicide attempt cases occurring during the period of December 2010 to May, 2013. From the mentioned three hospitals, 231 cases of suicide attempts recorded along with addresses and were contacted

for interviews through the help peer and friends and other personal sources. However, only 35 of the respondents consented for interview while the remaining identified persons were not willing to participate in a study on such a sensitive issue. The respondents who consented to participate were interviewed in the span of two months. The data were analyzed qualitatively by applying a life history narrative method whereby the information collected through interviews were transcribed, and then linking field data with the already existing credible research on the subject. In addition, due to sensitivity of the issue, coding method was administered to increase the anonymity of respondents.

The study also has few limitations, for example, about 231 suicide attempt cases were identified in hospital records, however, only 35 cases were accessed. The reasons for inaccessibility to the cases include fear of disclosure of attempting a suicide to the general community, unwillingness of the cases to discuss their issues, and lack of resources to study a large number of individuals.

Results

Socio-demographic information of Respondents

Age and Gender wise distribution of Respondents

Gender refers to the culturally and socially constructed differences between females and males found in the meanings, beliefs, and practices associated with “femininity” and “masculinity” (Kendall, 2007). Gender also constitute an important aspect for the current study. For further details see the table below:

Table 1: Age and Gender wise distribution of Respondents

Gender	Age			Total
	15-20	21-25	26-30	
Male	03	12	05	20
Female	01	08	06	15
Total	04	20	11	35

The above table illustrates the age and gender wise distribution of respondents. the tabular information shows that a total of 20 respondents were male whereby 3 respondents were in the age category of 15-20, 12 in the age category of 21-25 while 5 respondents were in the age category of 26-30. 15 of the respondents were female where 1 female belonged to age category of 15-20; 8 female were in the age category of 21-25 while 6 female belonged to age category of 26-30.

Family Type of Respondents

Family type is an important socio-demographic characteristic. Elizabeth et al (2013) asserts that family type and environment significantly affects an individual’s personality, behavior and perceptions

whereby it is also important to mention that these aspects are important while considering suicidal behavior. Regarding family type of respondents see the table below:

Table 2: Family Type of Respondents

Family type	Frequency	Percentage
Joint family	13	37.14
Nuclear family	22	62.86
Total	25	100

The tabular information explicates that 13 (37.14 %) respondents were living in joint family system. Majority i.e. 22 (62.86 %) respondents were living in nuclear family system.

Thematic Analysis

The importance of familial problems cannot be ignored while studying suicide and related behaviors. In this context, parental psychopathology can be an important contributing factor to suicidal behavior among youth. Prevalence of abnormal behaviors, habits, mental illness and drug use can provoke suicidality among children. Field information obtained through interviews reveals that parental psychopathology contributes to suicidality among youth. For example, the persons interviewed indicated that:

"I lived in a family where husband and wife (my parents) remained constantly in conflict with each other. The main reason of such constant tensions between my father and mother was my father who was a drug addict. Most often he had been the source of all domestic problems. He beat my mother, my brother and sister as well as he remained constantly in problems with neighbors..." (R-D-13).

Besides, a relevant extract while considering the use or abuse of drug among parents as source of developing suicidality among youth is:

"My father is a drug addict, and our family environment remained consistently tensed due to his abnormal behaviors after injecting drug. Such a tense environment made me tense, aggressive and my response to certain issues was influenced by the tense familial environment. Similarly, my attempt of committing a suicide was a tense and irrational reaction to a familial problem..."

The extract and its analysis indicate that familial issues i.e. quarrelling and conflict among parents create conducive conditions for suicidal behavior among youth.

Quality of parent-child relationship is an important indicator for many behaviors among children including suicidal behaviors. The current study also has considered the poor quality of parent-child relations as a source of inclination towards suicidal behaviors among the youth of the study area. The

argument acquires its further grounding from the following field data:

"There are few occasions where I disagreed with my parents and family. The first issue was about my admission in the university where my uncle harassed me but due to the support of my mother and grandmother, I got it. Second extreme disagreement was on the most important decision of my life i.e. my engagement but this time my mother and grandmother were unable to support me. Besides, few disagreements such as "dressing" also existed between me and my uncles" (R-Z-1).

The relationship between disrupted relationship with parents and its likely suicidal impacts is further sought out from the following field data:

"Right from my child hood I haven't spent enough time with my parents that I needed. My cousins and other relative spent more time with them than me. One of my sisters has been very close to my parents. It frustrated me enough, for not being able to be with my parents as my sister. I can say confidently that my suicide attempt might have been backed by this frustration factor, among others frustrated..." (R-S-22).

The field interviews and its narration point to the fact that disagreements with parents and family members as well as the lack of enough time with family are certain major issues that have a strong association with suicide attempts among youth. Narratives of some of the respondents i.e. R-F-12, R-N-18, R-M-11, R-M-33 and R-T-7 point towards yet another dimension of the time issue i.e. staying away from parents and family. It further implies that the lack of parental and social support has been one of the major pushing forces towards suicide and the likely behaviors.

Family rejection or negative family reaction (e.g. particularly due to developing sexual relations with someone) can incline individuals towards attempting a suicide. Field data and observation show that family negation and rejection is an important factor responsible for making one

suicidal. In this context data obtained from respondents i.e. R-N-18, R-U-2, R-T-30, R-A-27, R-B-20, R-A-34 and R-Z-3 indicate a correlation between family negation, rejection and suicide attempt. These respondents were of the opinion that on various occasion their families had rejected and negated them:

"My family members cared about me and loved me a lot. However, after university admission and developing a relationship with a guy altered the situation. As my family became aware of my affair with a boy, it started treating me unsympathetically and taunting me frequently. This initial mild maltreatment of me by my family converted later into beating and I was banned from the university to which I reacted. Later on, as I continued to keep my relation with that boy, my family rejected me all at once. My father and uncles even didn't talk to me on the day of Eid" (R-Z-3).

Parental supervision is significant to balance development of a child's personality. Imbalance supervision, for instance, a little or excessive supervision can contribute to problems regarding children's behavior and personality. Suicide and related behaviors can be a result of imbalance parental supervision. There is a clear accordance between the literature review and field data on the fact that parental supervision is associated with suicide attempt among youth. In this context, field information and observation indicates mix results i.e. half respondents i.e. R-J-21, R-F-19, R-U-2, R-L-23, R-D-29 stated that their parents didn't care about them while the other half i.e. R-T-30, R-A-27, R-W-16, R-S-35 and R-B-20 claimed an excessive care from the parents. Most important here is to notice the development of different behaviors leading to suicidal ideation between the non-supervised one and excessively supervised one:

"My parents never bothered about my activities while my uncles regularly kept eyes on their children. As a result, I got full authority of doing whatever I wanted to. I remember when me and my cousin (uncle's children residing in same home) were caught smoking when we were in 9th class. My cousin was beaten and threatened in case of smoking again while my father just slapped me once and didn't notice the issue seriously. Later on, I developed habit of smoking and then slowly moving towards dangerous drugs like Charas (Marijuana), and indeed drug use played an important role in making me thinking about suicide...." (R-F-19).

On the contrary R-B-20 is among those subjects who said that they were too much supervised and argue that:

"I get really frustrated and even angry when someone every time moves around me like a spy and

my parents especially my father and one of my uncles acted like James bond 007(making fun of his parents and elders). My uncle searched regularly my dvd's collection to see whether I watched porn movies. Even my father and uncle tried to know about my cricket colleagues' background in order to see whether they smoke and watch porn movies. On these issues, I had quarreled with my uncle severally because I really got frustrated and insulted few times in front of my friends. So I think it actually made me aggressive..." (R-B-20).

Parental supervision matters in case of suicidal behavior i.e. in case of little/weak or too much supervision child can suffer from suicidal thoughts (Allison et al., 1995).

History of suicide and related behaviors (e.g. prevalence deliberate self-harm, suicide attempt or completed suicide among family members) can inclined an individual to develop suicidal ideation. Field data show a possibility of such association, yet a conclusive finding hasn't been found regarding the genetic nature of suicide. Only two of the subjects i.e. R-N-18 and R-I-15 belonged to such families but their relationship with suicidal attempters was not intimate. Besides, subjects R-A-34 had a cousin who was suffering from DSH that was not suicidal in nature. In this regard field data do not show enough or strong evidence of the role of family history in the increased rates of suicide in locality.

Value system and changes in it within families contributes to suicide and related behaviors. In this context, value conflict and issues arising from value conflict such as lack of parent child communication, familial conflicts and tensions as well as changes in pattern of marriages may develop suicidality among youth. Field data produce strong evidence that value system and changes within it are responsible for suicide attempt among. Most of the subjects argued that rigid value system in their families made them suicidal i.e. not taking their view in consideration in marital issues as well as minor decisions related to respondent's life. In addition, rigidity in families related to marital issues particularly effects women more as compared to men. This can be attributed to the male dominant and patriarchal structure of Pakhtoon society. The following extract, refers best to this fact;

"Strict value system is present in our family. As we are Pukhtoons by family so we mostly do marriages in same level casts. Further, in my case this strict value system was a factor due to which my elders didn't permit me to engage a guy which I liked rather they wanted to engage me in same level cast. Besides, strict Purdah system exists in my family

which also aroused problems between me and my uncle regarding dressing..." (R-R-5).

Thus, field interviews correspond largely to secondary data which further elucidates the link between strict and patriarchal value system and suicidality, especially among young female youth.

Discussion

Literature indicates that family and related problems play an important role in developing inclination towards suicidality. Brent (1995) for example, attributed suicide more to a familial rather than psychological imbalance. As a social unit, it affects the cohesiveness and stability of the larger society. The current study also confirms that family (e.g. familial problems) is an important pushing force in making an individual suicidal. Literature and findings of the current study further enumerates that family and familial problems are mostly related to dysfunctions of family while considering family being a structure responsible for cohesiveness and stability within society. In this regard, familial problems i.e. hostility, quarrelling, scapegoating, verbal and physical abuse, separation, marital issues and persistent tension at home leads to suicidal behavior. Findings of the current study in this regard are in line with study of Kosky, Silburn & Zubrick (1990).

The current study in relevance to the literature cited had revealed that there are broad range of factors and variables within family which provokes suicidal behavior. Among such variables, parental psychopathology is an important aspect which refers to an abnormal behavior and habits related to parents. Such behaviors include depression, substance abuse and certain other anti-social behavior that affect child behavior (see also the study of Joffe et al., 1988). Parental psychopathology is specifically related to adolescent suicides as argued by Brent (1995) whereby the current study has also indicated the same findings. In addition, for adolescents, there is a strong association between suicide and drug use among family members whereby the findings are in line with the findings of the study conducted by Howard-Pitney et al (1992).

Quality of parent-children relationship needs consideration while studying suicide. Quality of parent child relation is determined by various factors such as the lack of parental support, poor relationship between parents and children as well as minor or extreme disagreements within family (for further details see the studies of Gould et al., 1996 and Wagner, Cole & Schwartzman, 1995). On the other hand, a good parent-child relationship involves a careful parental supervision and

spending time together which are amongst the protective measures from suicidal behavior (Resnick et al., 1997). In this regard, findings of the current study illustrate that children who live apart from parents are at an increased risk of developing suicidal ideation where the findings are supported by the study of Gex et al (1998). Similarly, the current study also affirms that parent-child relationship can contribute to the development of suicide and related behaviors among youth, for instance, disagreement of parents and children on issues (e.g. marriages, decision making etc), lack of affection between parents and children as well as lack of time spending with each other are key indicators for inclination towards suicidality among youth.

Familial rejection and negation include in one the key factors contributing to prevalence of suicide and related behaviors among individuals. For instance, a recent study conducted by Ryan and his colleagues reveals that adolescents who experience family rejection or a negative family reaction (e.g. specifically in issues related to sexual affairs) at their "coming out" have an eightfold greater likelihood of attempting suicide than adolescents who experience no or minimal family rejection (Ryan et al., 2009). There is clear indication in the findings the current study that family negation and rejection, for example, ignoring an individual in case of having affair or intimate relations can make an individual suicidal. Further, taunting, abusing or stop talking with a person due to some disagreements can provoke suicidal behavior. Family's rejection or disapproval on certain grounds as mentioned above is yet another contributing factor for the development of frustration and feeling of loneliness, that in turn encourage suicidality among youth.

Experiencing the loss of a parent or close caregiver through death or divorce in childhood is a significant risk factor for suicide because such loss inhibits a person's ability to establish and maintain other close relationships with adults or deal with future loss (Maskill et al., 2005). The dissolved or broken family, as a result of divorce or death is an aspect which particularly increases the risk of development of suicidal behavior among children i.e. dissolved and broken families are associated with a phenomenon known as 'Attention Deficit' whereby the attention, care and love needed by a child is suspended thereby, creating a vacuum of despair and pessimism. Such aversive psychological states are the convenient zones for suicidal inclination and ideation. In case of dissolution or broken family the child should be provided with necessary socialization regarding life and death (the

findings are supported by the studies of Günay, 2005; Agerbo et al., 2002). In addition, female suffers from family discord more as compared to male however the association between family discord and suicide is more related to divorce than death (see for example the study of Wagner, Cole & Schwartzman, 1995).

As discussed earlier that family has a broad range of aspects and dimensions that provokes suicidal behavior among youth. Among them, history of suicide, suicide attempt and suicidal behavior in family members is one of the core dimensions (Brent & Mann, 2005). The current study reveals that children are much vulnerable to suicide in families having a history of suicidal behavior. Children's early psychological development may be disrupted if they are living in an environment where parents or other family members make suicide attempts. The study of Maskill et al (2005) also supports the mentioned finding. Further, in this context, Borowsky et al (2001) argues that a 2–6 fold increased rate of suicidal behavior is found in the relatives of adolescent suicide victims and suicide attempter. Research studies such as Brent et al (2003b) report that impulsive aggression is one of the determinants of suicide that get transmitted among family members. It further implies that suicidal behavior is genetically transmitted (Brent et al., 2005). The current study also validates that argument that prevalence of aggression among family members and history.

Value system and changes in value system of families contribute to suicide and related behaviors. In this regard, families with rigid value systems tend to be the significant source of suicide in adults (see the study of Portes et al., 2002). Family structure, socio-economic conditions and problems of communication between parents and children lead to suicidal behavior. Such issues arise from recent value-conflict such as changes in pattern of marriages, forced marriages and under age marriages. Moreover, these problems affect women more than men (Kocadas & Ozgur, 2001). The current study also validates the mentioned argument that value-conflict is linked with prevalence of suicidality in the study area, for example, changes in pattern of marriages, disagreements between parents and children in marital decision leads to suicidality.

Conclusion

From the above discussion, we conclude that although family being a basic social institution aims at a binding and supportive role in the society, it shouldn't however be ignored that it may also have the potential for causing certain life threatening

behaviors such as suicidality in its members. Family helps its members become familiar with their society and culture, any problem here may therefore lead to serious maladjustments in the larger society that could become a cause of suicide and the likely anti-social behaviors. For instance, such problems include problems related to parenting such as lack of parent-child relationships, familial tensions, familial rejection or negation, prevalence of abnormal behavior, mental illness and suicidal behavior among family member etc. Concomitantly, individual residing within such families are more prone to developing suicidal behavior among them leading to suicidal behavior.

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Original research

A qualitative study on health practitioners' subjective theories regarding the media effects on depression-related outcomes

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Abstract: There is a rich body of literature regarding the media effects on important mental health outcomes such as depression and suicide. We assessed the accuracy of health practitioners' subjective theories about media effects on depression-related outcomes and identified blind spots in academic research. Semi-structured qualitative interviews with 82 psychiatrists and psychotherapists were conducted in Germany. The participants imparted heterogeneous subjective theories ranging from simplistic extreme positions (no effects at all, the magic bullet theory) to more nuanced conceptions (reinforcement models, differential susceptibility). This study provides suggestions to manage possible media effects in clinical practice.

Keywords: *media effects, depression, psychiatric practice, qualitative interviews*

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Previous research has acknowledged the importance of the media in the mental health context (Choudhury, 2013; Clement et al., 2013; Edney, 2004; Philo et al., 1994; Scherr, 2015). Importantly, the media has been deemed to exert its influence in both beneficial and detrimental ways (Goldney, 2001; Niederkrotenthaler et al., 2010; Sisask & Värnik, 2012). For example, sensationalistic reporting on celebrity suicide has been shown to increase suicide rates (termed "Werther effect"; Niederkrotenthaler et al., 2012; Yip et al., 2006). However, responsible reporting on suicides may also have beneficial consequences by providing information on how to get help (termed "Papageno effect"; Bohanna & Wang, 2012; Frey, Michel, & Valach, 1997; Greenberg & Strous, 2012; Jamieson, Jamieson, & Romer, 2003).

The aim of this study is to explore psychiatrists' and psychotherapists' experience-based subjective theories about the media effects on depression-related outcomes using a qualitative analysis of semi-structured interviews with these mental health practitioners. By doing so, this study contributes to the literature in two important ways: First, this study contributes to the closing of an important, yet often-criticized gap between academic research and clinical practice by identifying possible blind spots in the academic research. The central assumption was that psychiatrists and psychotherapists might have been confronted with specific problems in their daily routines that had not received adequate attention in the academic research. Second, we assessed health practitioners' subjective theories of presumed media influence in the light of actual empirical evidence from academic media effects research. As most health practitioners are often uncertain about media effects on their clients, they are likely to benefit from reading this paper, as its

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aim is to help them in their clinical practice. The media penetrates our everyday lives, including the lives of mental health patients. Knowing whether or not the specific subjective theories of the practitioners are supported by empirical research may positively contribute to their everyday work with patients as well as to their mental health literacy (Furnham & Telford, 2011). This assumption is supported by previous media effects research showing that the *influence of presumed influence* has a substantial impact on cognitions and behaviour (Gunther & Storey, 2003): If individuals believe that the media has an effect on X, then this perception – irrespective of whether or not this perception is true – can lead to behaviour change.

A Primer on Media Effects

To improve our understanding of health practitioners' subjective theories, we provide a short primer on media effects. Media effects can be triggered by a single exposure to one stimulus such as reading one article in a magazine, passing one poster with idealized female beauty, or watching one talk show. In addition, media effects can also be triggered by repeated exposure to certain stimuli such as reading a certain newspaper every day, passing the same poster every morning, or watching a talk show every evening. Importantly, in the first scenario, media effects are evoked only once, at a single point in time. Conversely, in the second scenario media effects accumulate over time (see Perse, 2001). What becomes clear at this point is that there are many types of media effects (e.g., micro- or macro-level effects, content-specific or diffuse-general effects, attitudinal vs. behavioural vs. cognitive changes, alteration versus stabilization, short- or long-term effects; intended or unintended effects; conscious or unconscious effects; see Sparks, 2013). Thus, effects of media on its audiences are a complex phenomenon.

The history of media effects research is often described as a series of several phases (Bryant & Zillmann, 2009): In the first phase (from the beginning of the twentieth century until the 1930s), there was almost no systematic empirical research on media effects phenomena. The so-called *magic bullet theory* is associated with this time: The media were assumed to be all-powerful. According to this theory, the media uniformly exert direct and strong effects on all individuals. After this initial phase, research started to systematically investigate media effects phenomena relying on newly developed empirical observation and experimentation methods. A second phase of thinking arose: Media effects studies found small or even no effects, leading to a *limited effects perspective*. Continued

research efforts, however, have been showing that the media, in fact, exert effects, albeit the size of these effects depends on third factors. *Differential susceptibility* has emerged as a key concept in the third phase (see Valkenburg & Peter, 2013, for an integrative model). As Valkenburg and Peter (2013) put it, "only if we know which, when, how, and why individuals may be influenced by certain types of media will we be able to adequately target prevention and intervention strategies at them" (p. 237).

Method

Participants

We invited psychiatrists and psychotherapists from a large urban area in South Germany to participate in our qualitative interview study. No ethical approval is required at the Department of Communication Science and Media Research (Ludwig Maximilian University Munich) when conducting interview studies with non-clinical participants aged over 18 years. Recruitment was carried out using online databases for mental health practitioners in this area of Germany. After identifying potential interviewees online, therapists were contacted by telephone or email to collect their informed consent for participating in the study. They consented to their interviews being used for academic analysis and publication. As the focus of the interview was on introspection/reflection about the relevance of the media within depression therapy with different patients, no gender and/or age quota was applied for the health practitioners. Nevertheless, those interviewed therapists who provided us with sociodemographic and/or professional information (which was optional due to data privacy concerns) were from a wide age range (30–60 years), with approximately 68% of the sample being female, 83% working as psychotherapists and with only 16% describing themselves as psychiatrists.

Interviews

A total of 82 psychiatrists and psychotherapists were interviewed by 41 trained interviewers in 2014 and 2015. The interviews were conducted by communication students of our department with a background in social science methods. All of them were trained in a course on that topic by extensive literature review, expert briefing (SS), and group discussions in class. Most of the interviews were recorded at health practitioner's office, although there was no restriction placed on the interview location.

After informing the interviewees about the purpose of the study and collecting their informed consent

forms, the participants were asked to talk about the relevance of media within depression therapy. We followed a qualitative approach: Interviewees were totally free to tell us whatever they wanted. We did not set any limits, thus they could basically tell us the thoughts that were utmost in their minds on the issue. Nevertheless, an interview guide was developed to map the different areas that were relevant for this research project (e.g. other questions regarding media use by their patients that are not presented herein), but the interviewers

were primarily instructed to keep the conversation flowing naturally. The guide included the following areas: Background of the interviewee, patients' media use, media content used by patients, and patients' motives to use media (the full guide can be obtained upon request). At the end of the stipulated interview time, the interviewers were instructed to check whether all of the relevant areas had been discussed.

Table 1
Characteristics of the 82 Psychiatrists and Psychotherapists Interviewed about Their Subjective Theories on Media Effects

	<i>n</i> (<i>N</i> = 82)	%
Age at interview, years		
25–40	18	22
41–50	19	23
51–60+	28	34
Not reported	17	21
Sex:		
Male	24	29
Female	56	68
Not reported	2	3
Profession (self-description):		
Psychiatrist	13	16
Psychotherapist	68	83
Not reported	1	1

Analysis

A qualitative interpretive approach was used, combining thematic analysis with constant comparison (Glaser & Strauss, 1967; Ziebland & McPherson, 2006). We used MAXQDA – a software package developed for the analysis of qualitative data – to facilitate the analysis. Both authors read the interview transcripts, discussed the content and coded the material for relevant ideas. We used our expert knowledge and relevant media effects literature to develop our interpretation and categorization approach. All of the emerging ideas were coded for overarching categories. We use pseudonyms when reporting the results.

Results

The role of the media in clinical practice was not a focal point for most health practitioners. A large number of health practitioners only seemed to construct their subjective theories on media effects at the time of the interview. The health practitioners had heterogeneous subjective theories regarding the media effects on depression ranging from extreme, highly simplistic models, to more nuanced and elaborated conceptions. Although health practitioners, when viewed as a group, had developed a rich understanding of the

issue, each unique subjective theory was rather narrow and focused only on a small subset of possible media effects. This fact was even acknowledged by many of the health practitioners themselves when explicitly or implicitly telling us about their uncertainty in judgment. This aspect was emphasized by phrases such as “could be”, “I don’t know”, “I believe” or “my feelings tell me”. Interestingly, although many health practitioners did not attribute an important role being played by the media at the beginning of the interviews, they

increasingly appreciated the importance of media effects as a result of their rumination during the interview process. It seemed that some health practitioners seriously elaborated on the role of the media for depression-related outcomes for the first time during their interviews. Based on their reflections, they increasingly acknowledged the importance of the media’s role in depression-related outcomes. Table 2 presents a summary of key findings.

Table 2
Health practitioners’ subjective media effects theories: A summary of key findings

Overview	<ul style="list-style-type: none"> • Role of the media in clinical practice was not a focal point for most health practitioners. • Health practitioners had heterogeneous subjective theories regarding the media effects on depression ranging from extreme, highly simplistic models, to more nuanced and elaborated conceptions. • Many health practitioners did not attribute an important role being played by the media at the beginning of the interviews. However, they increasingly appreciated the importance of media effects as a result of their ruminating about media influences on their patients during the interview process.
Substantial Causal Effects	<ul style="list-style-type: none"> • Many health practitioners told us that the media was a rather powerful agent – consistent with the magic bullet theory of media effects. • Some health practitioners placed the emphasis on specific topics: Suicide reporting, Internet pornography, idealized standards of beauty, patients’ perception of diseases, reduction of social contact.
Limited Effects and Reinforcement	<ul style="list-style-type: none"> • Some health practitioners held a limited effects perspective, denying any causal effects whatsoever. • When proceeding to ruminate about the possible effects, they then typically switched to a less extreme position, consistent with a reinforcement model. Reinforcement was a central term highlighted by many health practitioners. • Several health practitioners noted a reversed causality model in the sense that individual predispositions such as depression have a causal impact on media use.
Differential Susceptibility	<ul style="list-style-type: none"> • Some health practitioners provided a nuanced perception of media effects by highlighting the fact that some individuals are more susceptible to media effects than others are. • The health practitioners mentioned effect moderators: Severity level of depression, age, past experience, media content.

Substantial Causal Effects

Many health practitioners told us that the media was a rather powerful agent – consistent with the magic bullet theory of media effects. Susan told us that “every form of input elicits a significant reaction” and John said that “the media has a relatively strong influence”. Besides these more general assumptions regarding strong media effects, some health practitioners placed the emphasis on specific topics. They clearly focused on the negative consequences for their clients of certain types of media coverage.

A frequently mentioned topic was *suicide reporting*. Tom mentioned the suicide of a German celebrity (the soccer player Robert Enke), who suffered from depression and died by suicide. Tom then went on to explain how “depression was very, very present in the media, and [that his] impression was that the media coverage was a wake-up call for many patients who recognized that there were similar others out there, too.” Tom emphasized that such news coverage could contribute to a feeling of “relief”. Jessica used a similar media effects model and used the term “ease”. Jessica added that in addition to this potentially positive effect, suicide coverage could also exert harmful effects: “Many patients become afraid and develop fears: ‘If this could happen to him [i.e. Robert Enke], how will I ever be able to protect myself? How can I manage to not kill myself?’” Possible copycat suicides were also noted by Mary, who told us that patients often think, “Well, this guy committed suicide, so I could also do it, because in my life there is no sense at all”. Christina also noted the special role of news reporting on “depressive persons that are present in public life and possibly commit suicide”. She explained how this touched on her depressed patients “every once in a while”. Importantly, she was uncertain about the consequences of such reporting and thought this would depend on whether her clients were “deteriorating, ameliorating” or “stabilizing”. Susan noted possible copycat suicides as a risk of news reporting as well. Furthermore, she told us that such media content was “emotion-boosting, in [both] a positive and a negative sense”. Suicide reporting can exert “stabilizing functions, if it is an informative article”. In her view, such articles can contribute to “people understanding themselves better, and their depression, and feeling nice and cosy, and also looking up health-related information”, which is a desirable outcome of media use, as patients can then start “figuring out their current situation and what they can do about it”.

Julia noted the importance of *Internet pornography*. She emphasized the difference between sexuality

practised in reality and sexuality as constructed in porn videos. This leads to “massive problems in young adults”, because they deem “the things they see on screen as real and worth striving for. This kind of content acts as a role model, but these unrealistic porn videos can contribute to sexual dysfunction at the same time”, which, in turn, “leads to depression”.

Edward emphasized a further content dimension: *idealized standards* of beauty and other ideals that are out of reach. He noted that “media use will in any case have an influence on depression”. There are “broadcasts suggesting that you have to be first class, like a top model or a top superstar, or whatever”. Exposure to this content is likely to elicit “feelings of inferiority”.

A further important aspect was mentioned by John, when stating how the media had the power “to influence how *patients perceive diseases*”. Jessica held a similar view on this presumed media influence when saying that patients tended “to have the diseases they read about”. She gave one example of one of her patients who read something and then came to see her believing he had rabies. He did have a few rabies symptoms, but “this could be clearly traced back to his anxiety disorder. What these patients cannot do, due to their missing medical experience, is to weight the information they come across.”

The final presumed media influence that was mentioned was targeted at the exposure itself, and not the content. Philip noted that there might be harmful displacement effects merely arising from media use, because “other things” (e.g. meeting friends, interpersonal contacts outside of the home) are then inhibited. In this way, the media may *reduce social contact* that in turn increases depression. Toni pointed in the same direction when he stated how “using the media too much” led to us becoming “lonely”. He added that “The higher the media use, the more we let them wash over us, the less active you become.” Sarah also highlighted this point with regard to the role of the Internet: “The Internet is a factor contributing to loneliness.”

Limited Effects and Reinforcement

Some health practitioners held a limited effects perspective when presuming null effects with regard to the media, denying any causal effects whatsoever. This limited number of health practitioners typically told us this at the beginning of the interviews. When proceeding to ruminate about the possible effects, they then typically switched to a less extreme position, consistent with a reinforcement model. One important idea in this

regard is that depression leads to selective media use that in turn increases the severity of depressive symptoms.

Importantly, several health practitioners noted a *reversed causality* model in the sense that individual predispositions such as depression have a causal impact on media use. Instead of talking about what the media does to patients, they focused on what depressive patients do with the media. Two main ideas emerged from the interviews. First, Tina noted that depression led to social retraction, which, in turn, increases “passive” media use. Philip also noted that “the more depressed or phlegmatic a patient is, the more likely it is that he or she will turn on the TV.” Theresa noted: “I do have the feeling that many of my patients only have reduced social contacts and that they compensate for this lack by using the TV.” The Internet was also important, as David added: “The hurdle or inhibition level to make acquaintances over the Internet is lower and it is easier as compared to going outside, talking to people, and making ‘real’ social contacts.” Donald also mentioned TV and the Internet, and noted that depressive people tended to use these types of media to “unwind and drift away”. Second, Jessica told us that depression led to specific “filter mechanisms” that contribute to more attention being given to “the lousy and unpleasant things in life”. John noted this point as well when telling us that depressive patients tended “to emotionally process media content in different ways compared to ‘John Q. Public’”.

Importantly, these selective exposure patterns can lead to *reinforcement*, as many health practitioners noted. Reinforcement was a central term highlighted by many health practitioners. For example, Ursula outlined how the media “can reinforce depressive episodes, because it perfectly fits into the elements of depression. I do not need to go outside my house”, and Ryan noted that “eventually those with a slight depression increasingly use the Internet or play [video games]. This can reinforce itself over time. They will not find their way out.”

Differential Susceptibility

Some health practitioners provided a nuanced perception of media effects by highlighting the fact that some individuals are more susceptible to media effects than others are. Ursula noted that there might be “a relationship, but not in general. There is not a relationship in each depressive patient.” The health practitioners mentioned effect moderators: William highlighted the importance of the *severity level of depression*. He told us that the media “plays a role” in the early stages with those

suffering from mild depression and in seriously depressive patients. This implicates a curvilinear relationship in the sense that the media’s role is perceived to be stronger at weak and strong severity levels of depression when compared to moderate levels. With regard to media use patterns, Benedict, Julia and John noted that strongly depressed individuals tended to show reduced media use patterns. In their view, this was caused by a general tendency towards social withdrawal.

A further effect moderator that was mentioned was *age*. Again, there was some theorizing about curvilinear effects. Herbert told us that there was a stronger susceptibility to media influence in children and adolescents compared to adults. Tom believed that the media played a more important role for health practitioners who worked with younger adults. The media is “more frequently a topic” in this group. Furthermore, Toni emphasized media effects in the elderly: He argued that “one of depression’s symptoms is social withdrawal. Older individuals withdraw themselves from social contacts ... there is a correlation, for sure.” Julia highlighted that the underlying mechanism may be different in children/adolescents/younger adults and the elderly: There is a “risk of addiction” in the “younger generation”, but the elderly are “overwhelmed”.

Past experience was also mentioned as an effect moderator. Christina told us that the media can act as a trigger. She illustrated this idea with an example: Media coverage of rape stories can re-activate emotional reactions in women who have experienced rape themselves. This can thus contribute to a deterioration in their mental health status.

Susan also noted that the same content can elicit different effects. “Funny” movies may elicit a positive short-term effect on mood. Recipients may be in a more positive mood immediately after viewing a comedy film. However, exposure to “funny” movies may also elicit negative consequences via social comparison processes: “They are doing just fine and I am struggling so much with my life.” Thus, emotional content can “easily pull one’s emotional state even further down”.

Discussion

Psychiatrists and psychotherapists in this study espoused heterogeneous subjective theories ranging from extreme positions (no effects at all, the magic bullet theory) to more nuanced conceptions (reinforcement models, differential susceptibility). Although an overarching idea was

that the media may elicit detrimental effects, some health practitioners emphasized a rather complex interaction between media use and depression-related outcomes. Most notably, reinforcement was seen as a main consequence. One important question is whether or not the available empirical evidence from media effects research supports the subjective ideas that were raised concerning the media effects.

Academic research has accumulated empirical evidence on a wide range of topics raised by health practitioners (i.e. reporting on suicides, Internet pornography, idealized standards, perception of diseases, social withdrawal, reversed causality and reinforcement patterns, and different susceptibilities). Of course, these phenomena are complex and, due to space limitations, we are unable to thoroughly review the literature on each of these domains. However, we will now provide a concise assessment and suggest some literature for further targeted reading.

Assessing the Accuracy of Subjective Theories

Research findings are consistent with many assumptions outlined by the health practitioners in the present study. However, the extreme positions (no effects at all, the magic bullet theory) are too simplistic and are no longer supported by the accumulated empirical evidence (Bryant & Oliver, 2009). Based on the empirical research literature, we know that:

1. Reporting on suicides, in particular, sensational reporting on celebrity suicides, is associated with an increase in the suicide rate (Stack, 2005) (see below). However, responsible reporting (e.g. providing information on how to get help) can elicit preventive effects as well (Niederkröthaler et al., 2010).
2. Watching porn videos frequently is related to negative outcomes such as life dissatisfaction (Peter & Valkenburg, 2006). For example, Stewart and Szymanski (Stewart & Szymanski, 2012) showed that women's self-reports of their male partner's porn video use were negatively associated with self-esteem, relationship quality and sexual satisfaction.
3. Exposure to idealized (female) beauty decreases body satisfaction (Grabe, Ward, & Hyde, 2008) that in turn is associated with a negative self-perception, depressed mood and disordered eating (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999).
4. Media exposure may change how people perceive diseases (Klin & Lemish, 2008; Philo et al., 1994). For example, the search engines on the Internet can contribute to the construction

of a cognitive representation of an individual illness, which in turn guides behaviour in the future, e.g., with regard to managing the disease based on the information found online or by influencing how conversations with clinicians about the disease will be (Petrie & Weinman, 2012).

5. Excessive media use is associated with social withdrawal-related outcomes. For example, research has found that individuals who are lonely tend to watch more TV (Perse & Rubin, 1990) and men who are chronically lonely are more likely to develop "parasocial relationships" (Horton & Wohl, 1956) with media personae such as news anchors or talkmasters (Wang, Fink, & Cai, 2008). For instance, Scherr (2016) found a positive correlation between depression and escapist motives for using media within a sample representative for Germany.
6. Depression as a predisposition can be related to selective exposure phenomena (Niederkröthaler, Arendt, & Till, 2015) that in turn may lead to reinforcement patterns (Klapper, 1960; Slater, 2007).
7. Some individuals are more susceptible to media impact than others are (Valkenburg, & Peter, 2013).

Identifying Possible Blind Spots in the Academic Research

A comparison between some ideas derived from the qualitative interviews with practitioners and the findings obtained from the academic research suggests a tension and a difference in emphasis. We now wish to contribute to the closing of an often-criticized gap between the academic research and clinical practice by identifying possible blind spots in the academic research. We assumed that psychiatrists and psychotherapists might have been confronted with specific problems in their daily routines that had not received adequate attention in the academic research. Based on our reading of the literature, we will address three key points.

First, research on the effects of *suicide reporting* has focused on copycat suicides and suicide attempts. There is a great body of literature providing empirical data on imitative effects (Gould & Shaffer, 1986; Niederkröthaler et al., 2009; Sonneck, Etzersdorfer, & Nagel-Kuess, 1994; Stack, 2009; Williams, Lawton, Ellis, Walsh, & Reed, 1987). Less is known about the possible beneficial consequences of exposure to suicide-related media content. Health practitioners in the present study mentioned that exposure to suicide articles may elicit a "relief" effect that was deemed as beneficial

by some interviewees. For example, one psychiatrist told us that suicide reports may act as a “wake-up call” for many patients who may then recognize that there are similar others out there.

We highly recommend that the greatest of care should be taken when assessing the accuracy of this subjective theory: Based on social comparison processes (Festinger, 1954), elicited feelings of “relief” or “ease” may be perceived as beneficial by the patients themselves. This may contribute to a much calmer emotional state. In many contexts and for many people, this can be deemed a beneficial outcome. However, this may be substantially different for vulnerable individuals at risk: Such feelings have often been described as occurring right before the suicidal act, often as “the calm before the storm” (Sonneck, Kapusta, Tomandl, & Voracek, 2012). If exposure to suicide reports elicits such feelings of “relief” and “ease” in individuals at risk, then this may have fatal (and possibly lethal) consequences. Even if such reports were to elicit a much calmer emotional state that is (subjectively) experienced positively by individuals at risk, the (objective) consequences might be dire.

There is already empirical evidence that a specific category of suicide reports may elicit preventive effects. For example, an Austrian study found that news coverage of individual suicidal ideation that was not accompanied by suicidal behaviour was negatively associated with suicide rates. Follow-up analyses indicated that the publication of media reports on individuals who adopted coping strategies other than suicidal behaviour in adverse circumstances was negatively associated with suicide rates, a phenomenon termed the “Papageno effect” (Niederkrotenthaler et al., 2010). Clearly, more research on this important topic is needed.

Second, exposure to *Internet pornography* was mentioned as a relevant factor. It has been argued that watching unrealistic depictions of human sexuality in porn videos might contribute to negative outcomes such as sexual dysfunction that in turn may stimulate depressive symptoms. Unfortunately, there is a strong divergence between the importance of the phenomenon in contemporary society – studies on Internet pornography have emphasized the risks regarding harm to children and adolescents’ addictive patterns of use, the dissemination and consumption of illegal pornography and the creation of negative role models (Döring, 2009) – and the number of media effects studies investigating this topic. There is clearly a need to enrich our understanding of the mechanisms underlying possible detrimental effects of sexually explicit material.

Third, previous research has largely failed to investigate the role of important effect *moderators*. The severity level of depression is a prime example. Is there a curvilinear relationship as suggested by some of our interviewees? Which kind of media content has detrimental (beneficial) effects? Which groups of individuals are more susceptible to specific media effects than others? Although we are aware of the difficulties that arise in such studies (e.g. recruiting individuals with varying levels of suicidality), moderation effects should nevertheless be a central focus of future studies. In fact, media effects may be very different (and may even point in another direction) when considering effect moderators.

Implications for Health Professionals: Managing Media Effects

Previous research has accumulated evidence that the media plays an important role in various domains of life in general (Bryant & Oliver, 2009; Potter, 2012) as well as for those suffering from specific mental health issues (Caputo & Rouner, 2011; Eisenwort, Till, Hinterbuchinger, & Niederkrotenthaler, 2014; Graham, Hasking, Clarke, & Meadows, 2015; Klin & Lemish, 2008; Philo et al., 1994; Wahl, 2003). Based on our findings in the present study and based on previous studies (Scherr, 2015), we wish to emphasize that many health practitioners might not attribute the relevance to the media that it actually deserves. As already noted, many health practitioners did not attribute an important role to the media at the beginning of the interviews. Nevertheless, they increasingly appreciated the importance of media effects as a result of their reflections during the interview process. Health practitioners may consider informing themselves more about media effects, e.g. using introductory books (e.g., Sparks, 2013), since they might interfere with the therapeutic practice. For example, regarding ruminative tendencies of patients, communication research shows that patients suffering from depression also use media to ruminate (Scherr, 2016). While therapeutic efforts might primarily focus on everyday situations that trigger rumination and on how to cope with them, patients might show the same patterns of rumination when they, e.g., excessively read in their Facebook timeline or through old chats with friends on their smartphone. In contemporary society, the media is omnipresent. Increasing parts of our lives are pervaded by the media. Thus, it is important to be aware of the possible consequences of media exposure on mental health outcomes. We thus recommend four

points to manage possible media effects in clinical practice:

(1) Be aware of your patient's media use and monitor it during treatment.

(2) Think about possible media effects and try counteracting detrimental ones and supporting beneficial ones.

(3) Consider exposing yourself to expert sources (e.g. calling academic colleagues who are experts in the field of media effects) if you experience uncertainty.

(4) Alter your patient's media use patterns in line with your treatment's goals and the course of treatment.

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Original research

Changes in the content of diary entries by a suicide as the date of death draws near

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Abstract: The diary for the four years prior to her death of a young woman who died by suicide, was examined to see whether trends in the content could be identified as the day of her death drew near. Many linear trends were observed over the last month, the last five months and the last four years of the diary which may provide insights into the psychodynamics of this particular suicide. For example, over the last month of her life, Sara focused less on the past, made more references to herself, used more tentative words (such as “maybe”), used more question marks, and had a greater focus on cognitive processes (such as “think”).

Keywords: suicide, diaries, cognition

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There has been interest in how suicides behave in the hours, days and weeks prior to their suicidal actions. Information on changes in their behavior might provide some insight into the minds of suicidal individuals as they approach the time of their death and also provide clues that clinicians and significant others might observe. Clements, Bonacci, Yerevanian, Privitera and Kiehne (1985) and Keith-Spiegel and Spiegel (1967) both noted that staff notes on psychiatric in-patients in the 24 hours prior to their suicides indicated an improvement in mood. Lester (2010) observed calming in the mood of a young man left two tape recordings for his parents six and two hours prior to his suicide. These results were surprising because an improvement in mood would seem to indicate a reduced risk of suicide rather than an increased risk, but they also serve as a warning to mental health professionals that an improvement in mood is not a reason to minimize the risk of suicide in a patient.

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I would like to thank the person who made this diary available to me but who wishes to remain anonymous

Pennebaker and Stone (2004) studied the diary of a young college student (called Katie, a pseudonym) in the year before she killed herself and noted an increase in positive emotions and a decreased in negative emotions over the last six months of her diary. This result was also surprising since the improvement in mood took place over a much longer period than expected – six months rather than 24 hours. The question arises, therefore, whether these changes in mood were unique to this young woman or is it a general trend?

An opportunity to answer this question presented itself with the diary of a 33-year-old single woman who killed herself (the pseudonym Sara will be used for this article) and who left a diary that extends up to the day that she died. Sara appears to be an intelligent young woman who dropped out of college because, as she states, a lack of motivation. She works as a part-time waitress and dates lower class men most of whom are alcohol and drug abusers. Her suicide occurs after an on-and-off 18-month relationship with one of these men after he tells her that he does not want to be with her.

In their study, Pennebaker and Stone used a computer program, the Linguistic Inquiry and Word Count (LIWC: Pennebaker, Francis, & Booth, 2001) to analyze changes in the content of Katie’s diary.

This program counts the presence of 74 linguistic categories such as words denoting positive emotions, negative emotions, death, religion, and social relationships. The present analysis used the LIWC to search for changes in the content of Sara's diary over time.

Method

As noted above, the LIWC (Pennebaker, et al., 2001) was used to analyze the diary entries. Apart from the word count and the words per sentence, the other measures are expressed as percentages. For example, the measure for anger is the percentage of words expressing anger relative to the total word count. It is possible, of course, for a particular word to fit into two or more categories. For example, a swear word may also be a sexual word.

The present analysis focused on the 10 entries in the diary in the last month of Sara's life, the 38

entries in the last five months of her life, and the 62 entries in the last four years of her life. Five months prior to her death, Sara attempted suicide and was ordered by the court into outpatient counseling. She attended counseling regularly and took an antidepressant. In the five months between her suicide attempt and her death by suicide, Sara mentioned the word "suicide" nine times in her diary.

Results

There were ten entries in the last month of Sara's life (the month of May). Nine of the 73 variables showed significant linear changes over this month (two-tailed $p < .05$) and ten showed linear trends ($p < .10$), more than would be expected by chance (see Table 1).

Table 1

Linear changes in the word content in Sara's diary (Pearson correlations shown). Only variables with at least one statistically significant correlation are shown.

	Last month n=10	Last 5 months n=38	Last 4 years n=62
Word count	-0.56*	0.01	-0.06
Words per sentence	-0.51	0.02	-0.28**
Question marks	0.71**	0.22	0.09
Dictionary words	0.16	0.39**	0.36***
Words with >5 letters	0.28	-0.14	-0.31**
Pronouns:			
all	0.50	0.22	0.58***
I	0.66**	0.02	0.22*
We	-0.65**	-0.12	-0.19
Self	0.57*	-0.04	0.16
You	0.40	0.23	0.28**
Other	-0.34	0.08	0.31**
Assent	0.60*	0.09	0.20
Article	-0.66**	-0.31*	-0.58***
Prepositions	-0.72**	0.10	-0.11
Numbers	-0.36	0.03	-0.22*
Emotions:			
Negative emotions	0.29	0.28*	0.26**
Anger	-0.31	0.31*	0.39***
Sad	-0.06	0.05	0.22*
Cognitive mechanisms	0.57*	0.37**	0.38***
Causes	0.07	0.31*	0.25**
Insight	0.49	0.23	0.24*
Discrepancies	0.36	0.18	0.33***
Tentative words	0.72**	0.28*	0.25*
Senses	-0.43	-0.08	0.21*
Social	-0.13	0.12	0.35***
Communications	-0.29	0.04	0.24*
References to:			

others	-0.25	0.17	0.35***
friends	0.55*	0.07	0.10
humans	0.68**	0.14	0.09
Time:			
in general	-0.39	-0.37**	-0.26**
Past	-0.61*	-0.09	0.08
Present	0.57*	0.28*	0.31**
Future	0.49	0.34**	0.16
Space	-0.80***	-0.13	-0.27**
Up	-0.62*	-0.26	-0.24*
Down	-0.76**	0.20	0.05
Including words	-0.58*	0.21	-0.27**
Excluding words	0.49	-0.02	0.23*
Occupations	0.24	0.39**	0.49***
Jobs	0.07	0.31*	0.39***
Achieve	0.10	0.49***	0.48***
Leisure	-0.29	-0.42***	-0.22
Home	-0.03	-0.40**	-0.05
Sports	-0.59*	-0.04	-0.30**
TV	-0.37	-0.27*	-0.13
Music	-0.41	-0.08	-0.27**
Religion	0.01	-0.19	-0.28**
Sexual	0.05	0.13	0.31**
Swear words	-0.34	0.36**	0.22*

* two-tailed < .10

** two-tailed < .05

*** two-tailed < .01

The psychologically significant changes were:

1. A decreased word count per entry
2. More question marks
3. More references to herself
4. Fewer references to herself plus others (e.g., we)
5. More references to friends and other people
6. Less focus on the past and more on the present
7. More focus on cognitive processes (the use of words such as cause, know, think)
8. More use of tentative words (such as maybe, perhaps, guess)

There were 38 entries in Sara's final five months (from January through May), and 17 linear trends were identified. Three of these trends were also found over the final month of Sara's life: more words associated with cognitive processes, more use of tentative words and more focus on the present. Over the final five months, there was also more focus on the future, and this was almost statistically significant over the final month also. Over the last four years of her life (with 62 entries), 33 trends were identified. The increase in words associated with cognitive processes, tentative

words and words indicating the present tense were also statistically significant, indicating that these trends were long-term trends.

Since the goal of the study was to search for changes in the diary that might indicate an imminent suicide, linear trends found in the last month but not in the last five months or the four-year period were identified (see Table 1). The decreases were word count, references to self plus others, prepositions, references to the past, and references to movement downwards. The increases were question marks, references to friends, and references to humans in general. Several other trends were found in the final month but not in the final five months: an increase in references to herself, and decreases in articles, references to space and to movement upwards, inclusive words, and sports.

Regarding the variables of interest suggested by previous studies of diaries, for all three periods, there were no significant trends in positive emotions, and negative emotions increased only over the last five months and the whole four years, but not in the past month. Thus, the findings from Katie's diary did not generalize to this diary.

Discussion

This study of the diary of a young woman who died by suicide was designed to explore whether trends found in the analysis of a similar diary (Pennebaker & Stone, 2004) of an increase in positive emotions and a decrease in negative emotions could be replicated. Sara's diary did not show these trends. However, many linear trends were observed over the last month, the last five months and the last four years of the diary which may provide insights into the psychodynamics of this suicide. For example, over the last month of her life, Sara focused less on the past, made more references to herself, used more tentative words (such as "maybe"), used more question marks, and had greater focus on cognitive processes (such as "think"). It was as if Sara was questioning what she should do at the present time, and reducing her focus on others and on the past. This does not necessarily mean that she will choose to die by suicide, but perhaps that she may be about to make some decision.

How general are the trends identified for Sara? Whereas research has been conducted on samples of over 250 suicide notes (e.g., Gunn, Lester, Haines, & Williams, 2012), only studies of a few diaries have appeared, probably because such diaries are rare and because the significant others of the writers are often reluctant to share them with researchers. However, Lester (2014) presented case studies of seven diaries from people who died by suicide, both quantitative and qualitative studies. Hopefully, in the future, larger samples of the diaries of those who died by suicide will be collected and more general trends identified.

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Original research

Contents and medico-legal aspects of suicide notes: Turkey sample

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Abstract: This research is aimed to examine how mental state of suicide victims effect the handwriting and content of suicide notes. To achieve mentioned objective, 32 notes from confirmed suicide cases and 32 control samples were examined by using Olympus X-Tr stereomicroscope and gained data evaluated statistically. While the number of tapered ends does not significantly differ between suicide notes and controls, the frequency of angularity and tremor is significantly increased in suicide notes. A handwriting examination to confirm that the note is written in the victim's own handwriting is essential to determine the manner of death.

Keywords: Suicide Notes; Handwriting Characteristics of Suicide Notes; Content of Suicide Notes; Handwriting Examination; Forensic Sciences; Questioned Documents.

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A total of 3211 people committed suicide in Turkey during the year 2015 by increasing 1.3% according to the previous year. Males were 72.7% of them and females were 27.3%. Their marital status were determined respectively 50.5% married, 37.7% single, 7.2% divorced and 4.6% widowed in 2015. Approximately one fourth of people who committed suicide were graduated from primary school following by 20.9% by high school. The highest suicide rate for females was 18% among persons aged 15-19 years and males was in 20-24 age group with 12.8% (TÜİK statistics, 2016) Depending on the sex, age, cultural diversity and region of Turkey, the method of suicide is changed, but the leading methods of suicide are firearms and hanging for males, posining, hanging for females (Türker, et al., 2000; Arslan, et al., 2008; Ziyalar, et al., 2016). There are three types of unnatural deaths that are investigated by forensic medical examiners: homicides, accidents, and suicides. In deciding the cause and manner of such deaths, medical

examiners use autopsy and other supportive evidence associated with the deceased and found at the death scene. From this point of view suicide notes are of particular forensic interest. An examination which confirms that the messages written on the suicide notes are in the victim's own handwriting is crucial in establishing the manner of death. However, there is also another problem, although rare; all handwriting matches may not always show a genuine suicide. It is essential to consider a suicide note which might be written by a suicide victim under threat (Leenars, 1999).

Up to now most studies on suicide notes have dealt with psychiatric evaluation, considering both sociological and psychological factors at the time of the suicide (Edland, 1973; Chia, 1979; Foster, 2004). In addition, there are descriptive studies e.g. on the sex and age of the suicide note writers and differentiation between suicide notes from completed and attempted suicides [Lester, 1998; Leenars et al., 1992].

The aim of this study is to examine how the psychiatric status of a suicidal person affects the handwriting and contents of notes prior to the fatal act. A systematic study was carried out in order to compare the handwriting of suicide victims with controls.

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Method

The suicide notes used as the study material were chosen from among the cases that submitted to the author for expert's opinion on authenticity testing between 1995 and 2015. A total of 32 notes, evaluated as authentic handwritings of suicide victims, were analysed. These gathered cases were from a variety of cities located in Turkey, furthermore confirmed as suicides by law enforcement officers.

At first, the cases were examined according to demographic features such as age, education, marital status and sex. Secondly other aspects were assessed, such as the method and place of suicide, toxicological analysis, previous suicide attempts and psychiatric antecedents of the victims, type of paper and writing utensil used for writing the notes, and finally the place in which the notes were found.

All suicide notes were assessed according to the checklist established by using some of the criteria related to the document examination field (Table 1). The notes were not assessed in terms of the writing quality, rhythm, and pen pressure, because of uncontrolled writing conditions such as the paper pad use and types of writing utensils. A total of 32 control samples were chosen from sober, physically and mentally healthy individuals among samples

used in our study published earlier (Aşıcıoğlu, 2003). In choosing the control group, the demographic aspects such as age, sex, marital status, profession, and education were taken into consideration.

The text written by controls in our previously published study had been consist of 261 characters. Because of this limitation, when the number of characters in a given suicide note was larger than 261, tremors, angularity and tapered ends in the first 261 characters was counted, but when there were fewer than 261 characters in a given note, these parameters were counted up to the number of characters in suicide notes.

The assessments of these parameters were repeated one month later, and it was found that the results obtained in the two assessments varied only slightly. However, the results were reassessed, and the controversy disappeared.

Handwriting examinations were performed in a laboratory setting with the assistance of an Olympus X-Tr stereomicroscope (Olympus Optical Co. Ltd., Tokyo, Japan), natural light and direct and oblique angle lighting. All data were entered into a computer in order to form a database. Pearson chi square and Mann Whitney U tests were used for statistical evaluations.

Table 1

Checklist used for the assessment of handwriting on the suicide notes and controls

1. Variation in spacing between lines (1: none remarkable, 2: moderate, 3: significant)
2. Variation in spacing between words (1: none remarkable, 2: moderate, 3: significant)
3. Variation in spacing between characters (1: none remarkable, 2: moderate, 3: significant)
4. Alignment to margins (1: alignment to left, 2: alignment to right, 3: alignment to both margins, 4: both margins are disordered)
5. Alignment of words to baseline (1: closely adhering, 2: wavy, 3: words slope downwards, 4: words slope upwards, 5: peak or dip, otherwise straight)
6. Number of angularity (n)
7. Number of tremor (n)
8. Number of tapered ends (tapered beginnings and conclusions of strokes) (n)

Results

Out of 32 suicide notes 59 % (n = 19) were by males and 41 % (n = 13) by females, giving a male to female ratio of 1.46:1. Mean age of the victims was 36.8 ± 10.2, median being 35 and range from 13 to 65 years. Two individuals had a university degree, eight a high school degree, and 22 had completed primary school. In terms of professions, the victims were employees (n = 7), house wives (n = 7), shopkeepers (n = 4), farmers (n = 4), unemployed (n = 3), students (n = 3), civil servants (n = 2), and managers (n = 2). 16 victims were single, 15 married (11 of them with child), and one divorced with a child. Detailed information on the methods and places of suicide, types of paper and pen, and the

places where notes were found are given in Table 2. Of all victims, 22 % (n = 7) had psychiatric diagnoses and 19 % (n = 6) had previously attempted suicide. In 16 % (n = 5) of the victims alcohol was detected in toxicological analyses.

In 50 % (n = 16) of the cases the suicide note ended with the first name of the victim. Furthermore, 56 % (n = 18) of the victims signed the notes. The percentage of the suicide notes addressing the victim's core family (parents, child, sister, or brother) was 50 %, and these typically began with expressions such as "to my lovely family", or "to my well beloved son". Other persons to whom the victims addressed were state officers (tax officers, police, prosecutors, judges etc. - 9.4 %), darlings (6.3

%), other relatives or friends (6.3 %). 28 % of the notes did not contain any addressing words, and they typically began with general expressions such as “don’t forget me” and “I have 10.000 liras in debt”.

The longest note had 1872 characters and the shortest one only 29. Some of the victims embellished their notes with well-known poems and psalms or their own poems.

Writing specimens were categorised according to the degree of variation in space between lines, characters, and words by evaluating a 1 to 3 rating, ranging from “none remarkable”, “moderate” to “significant.” Data rated as “moderate” and “significant” were assessed as “variation.” This data is given in Table 3. Statistically significant variations in spaces between characters and words were observed between suicide notes and controls, but no statistically significant variations were observed in spaces between lines.

While the numbers of tapered ends do not show a significant difference between the suicide notes and controls, those of angularities and tremors are significantly larger in the suicide notes. The data is given in Table 4.

The data about alignment to margin and to baseline were evaluated according to Table 1. From the articles given in this table, item 1, 2, and 3 in article 4 were accepted as in order, but item 4 as out of order, whereas item 2, 3, 4, and 5 in article 5 were accepted as out of order, but item 1 as in order. The data about alignment to margin and to baseline did not show marked differences between suicide notes and controls (Table 5). The most common content of suicide notes was an explanation about suicide reasons. The other contents were mainly related to exculpation, apologies, farewell, and a general expression of life being too much to bear (Table 6). Since each note contains more than one theme, the total number of the content expressions exceeds 32.

Table 2

Demographic features of cases examined

Suicide method	n	%	location	N		Type of paper	N		Type of pen	N		Note found	n	
					%			%			%			%
Hanging	13	40.6	Home	23	71.9	Quality paper	13	40.6	Ballpoint (blue)	19	59.3	Nearby decedent	9	28.1
Gunshot wound	10	31.3	Workplace	5	15.6	Blue print paper	5	15.6	Ballpoint (red)	5	15.6	Table stand	8	25
Drug overdose	6	18.8	Terrain	2	6.3	Small paper	4	12.5	Ballpoint (black)	5	15.6	Night stand	6	18.8
Insecticide poisoning	2	6.3	Shoreline	1	3.1	Blank book	3	9.4	Fountain pen	1	3.1	Dressing table	3	9.4
Drowning	1	3.1	Construction	1	3.1	Laid paper	2	6.3	Fiber pen	1	3.1	TV Work place	3	9.4
						Others	5	15.6	Pencil	1	3.1	place Hanging place	2	6.3
	32	100		32	100		32	100		32	100		1	3.1
													32	100

Table 3

Variation in spacing between lines, characters and words.

		Vin SBL		VinSBC		VinSBW	
		N	%	N	%	N	%
Suicide	+	8	25.0	10	31.3	7	21.9
	-	24	75.0	22	68.8	25	78.1
Control	+	4	12.5	21	65.6	19	59.4
	-	28	87.5	11	34.4	13	40.6
χ^2	P	1.64	0.200	7.57	0.006	9.33	0.002

- + variation observed
- - variation not observed
- VinSBL: variation in spacing between lines
- VinSBC: variation in spacing between characters
- VinSBW: variation in spacing between words

Table 4*Frequency of tremor, angularity and tapered ends*

	Suicide			Control			Z	P
	Mean	SD	Median	Mean	SD	Median		
Frequency of tremor	11.4	11.3	8.5	2.3	1.7	2.0	5.4	0.0005
Frequency of angularity	15.2	21.5	9.0	1.6	1.6	2.0	5.5	0.0005
Number of tapered ends	55.6	46.1	44.0	40.3	24.5	36.5	0.6	0.5550

Table 5*Alignment to margins and words to baseline*

		Alignment to margins		Alignment of words to baseline	
		In order	Out of order	In order	Out of order
Suicide	n	4	28	1	29
	%	12.5	87.5	3.3	96.6
Control	n	8	24	4	28
	%	25.0	75.0	12.5	87.5
χ^2	p	1.64	0.200	1.75	0.185

Table 6*Contents of the suicide notes*

Content	N	%
Explanation about suicide reason	18	56.3
Exculpation	12	37.5
Apology	10	31.3
Farewell	10	31.3
Life too much to bear	8	25
Instructions regarding credit and debt	6	18.8
Love and respect for those left behind	5	15.6
Farewell in a religious way	5	15.6
Delegating responsibility for the child's care to the close relatives	4	12.5
Advice for those left behind	3	9.4
Hatred	3	9.4
Concern for their bodies	3	9.4
Gratitude	2	6.3
Revenge	1	3.1

Discussion

A variety of ways to commit suicide have been reported. Although the rates of these vary depending on parameters such as sex, age, and cultural background, gunshot wounds are usually ranked first, followed by hanging (Shields, 2005; Gowitt, 1986; Bennett, 2001; CDCP, 2004). In this study the leading rate of 41 % (n = 13) is with hanging. A similar result was found with suicides

among elderly people (> 65 yrs) in an earlier report (Byard, 2000).

In this study, approximately 72 % (n = 23) of suicides were found to occur at home. Bennett (Bennett, 2001) has earlier reported this proportion was 85 %. Lee and Collins (Lee, 1999). indicated that home was the most common place for paediatric suicides.

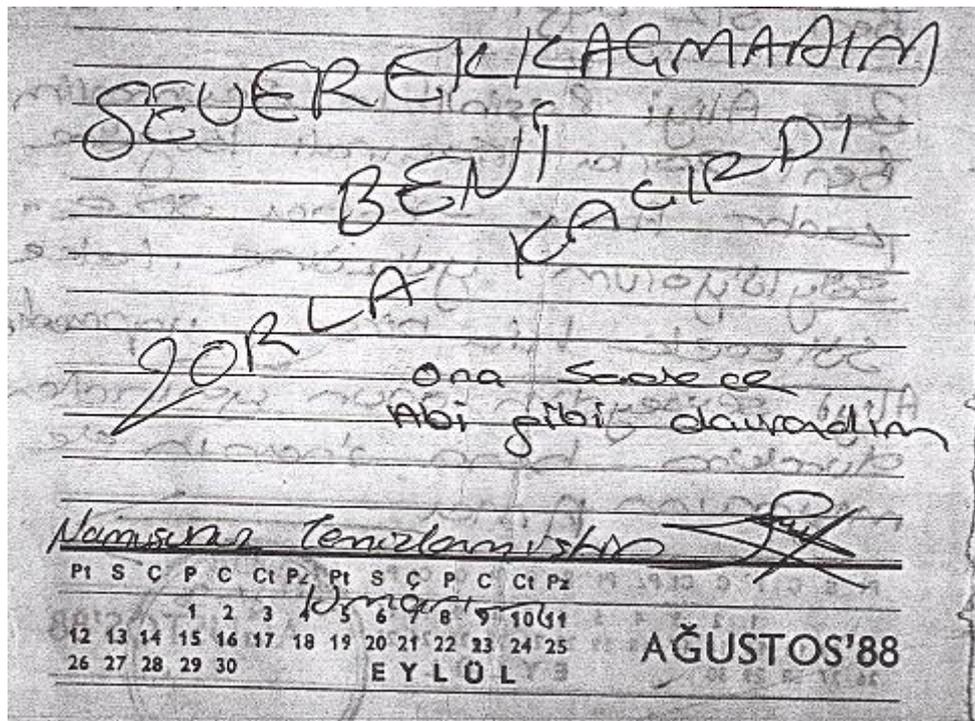
While the notes are mostly written on paper, there are some unusual suicide notes such as written on the body of the deceased person (Taylor, 1991). As

illustrated in Table 2, it was observed that the suicide notes were written with various types and colours of pen mostly on a quality paper, and on any kind of materials such as a blue print paper, a small

paper, a page from a blank book, and some other types of papers (a cardboard, an envelope, a prescription, and an invoice) (see Fig. 1).

Figure 1

Woman, 19 years old, single, high school degree, industrial worker, committed suicide by hanging. She left two notes written on the pages of agenda paper. The shorter of them contained 118 characters, the longer 1070.



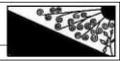
This variety is considered not to be based on the victim's unelaborated behaviour but on his/her fixation, impatience, and desperation. It was also observed that a lot of notes are written in a good layout, indicating the importance to the notes given by the victims before the final act. It was determined that seven suicide victims (22 %) were diagnosed with depression, commonly known to be a significant factor in suicides. A similar rate (26 %) was earlier reported by Bennett (Bennett, 2001). It is believed that suicidal people try to find relief from alcohol before committing suicide (Roslow, 1996). Because of this toxicological examination is useful in suicide investigations. In this study 16 % (n = 5) of the victims were under the influence of alcohol. Bennett earlier reported a rate of 38 % in the 678 suicide victims of all ages examined (Bennett, 2000), whereas this ratio was 24 % in elderly suicides (Heim, 1990).

Leenaars has defined the notes written by completers as "suicide notes" and similar notes written by attempters as "parasuicide notes". Leenaars reported that only about 2 % of attempters left a note, but pointed out that it is

impossible to be conclusive because most of the notes were destroyed or hidden by the attempters or their family (Leenars, 1992).

There is some controversy among authors concerning the incidence of leaving suicide notes. The percentage of suicide cases where the victim has left notes has been reported as 23 %, 30 % and 30.1 %, in three comprehensive studies with 1418, 3127 and 5161 suicide cases, respectively [Edland, 1973; Heim, 1990; Hideki, 2006]. In other reports, suicide notes were found in 14 % to 43 % of the cases examined (Shneidmann, 1957; Leenars, 1988, Ho, 1998; Salib, 2002). Some authors indicate that the incidence of suicide notes varies between age groups. Bennett reported the mean percentage to be 22 %, but only 11 % for victims under eighteen (Bennett, 2000).

Some studies report that women have a greater tendency for leaving suicide notes (Heim, 1990; Hideki, 2006; Ho, 1998), whereas others indicate that men leave notes predominantly (Chia, 1979; Salib, 2002). In this study men had left notes more commonly (59 %) than women (41 %).



Contrary to certain perceptions, e.g. that suicidal people do not leave a will in their last letter, do not sign the note, do not write dates or times, and are not concerned about survivors, all of these do occur in the notes (Leenars, 1991). In concordance with this data, it was observed in this study that 50 % of the suicide notes ended with the first name of the victim and 56 % were signed. Furthermore, five victims dated, two with accurate time, their notes, and many of them were concerned with their families and relatives and showed their feelings with the words such as "please look after my daughter," "nobody is responsible for my death," and "please don't send my son to orphanage". We have considered that the signing of the note is an indicator of the great importance given to this writing action.

A total of four notes written by the victims aged between 16 and 40 (mean: 27.3) contained less than 100 characters, and consist of words such as "please forgive me," "nobody is responsible for my death," and "adios." In contrast, five notes by victims aged between 20 and 39 (mean: 27.4) consist of more than 1000 characters and are enriched with poems, songs, and psalms. According to Leenars, suicide notes written by young people were typically longer, rich in emotions, and often begging for forgiveness. Suicide notes written by elderly victims were shorter, contained specific instructions, and were less emotional (Leenars, 1988). In terms of the relation between the ages of the victims and the

longevity of the notes, our results are not parallel with the findings mentioned above by Leenars.

Some victims left two or more notes, one of which contains only brief messages such as exculpation, apology, farewell, and expressions of love. In many cases, the victims make an attempt to indicate the scene of suicide in their brief notes with expressions such as "you find me in the basement" and "Look at the attic, I'll be there." It can be concluded that, as Hock mentions (Chia, 1979), the victims are concerned with their bodies, and by giving this information, they try to prevent the probability of not being found.

Interestingly, in some notes all blanks of the paper were completely filled, perhaps for concern of not being able to fit all their feelings on the message. At the same time, the gap between the lines was increasingly narrower towards the end of the page (see Fig. 2). It may be named "filled-in phenomenon".

The great majority of the suicide notes had underlined or capitalized words or sentences such as "GOODBYE" or "I DEBT IN 5 MILLION LIRAS TO ALI" in order to highlight the victim's important messages (see Fig. 3).

Taking into consideration variations in spaces between characters and words, statistically significant differentiation between suicide notes and controls is observed. This parameter may show that the suicide notes are more regular than controls (Table 3). These signs may indicate that the victims give importance and care for their final act.

Figure 2

Woman, 20 years old, single, five years school education, committed suicide by insecticides. The arrow shows the name of the victim. It is noteworthy that all blanks of the paper were completely filled and the gap between the lines became narrower towards the end of the page ("filled-in phenomenon").

şunu bilinki ben ~~o~~ ondan vaz geçemezdim
adım çıktı bir kere ne laflar duydum ben
onunla oynaştı kendini başkasına bastı
dedirtmem ben kararımı verdim kendi yolunu
kendim çiziyorum Alihsan abim bana
kaçarsan seni vururum diyordu isterse
gelsin yine de vursun böyle olmasın ben iste
medim ki yapayım kaderim böyleymiş
ben düşünüyordum ki birtak alihsan abim
beni anlar çünkü oda çok acı ~~ç~~ çekti ama
anlamadı ne yapayım çok vaz geçmek
istedim ama olmadı nolur beni anlayın belki
olur matlu olurum hoşça kalın kadersiz bacım

Figure 3

Woman, 20 years old, single, high school degree, student, committed suicide by drug overdose. The arrow shows the signature of the victim. The word "goodbye" (ELVEDA in Turkish) is capitalized. Blurring is marked because of tear. Chosen letters from the text are shown below.

Sırlarımı, gözyaşlarımı, se
Suar, ağlıyorum.
Daha sonra Allah
Ama artık savaşacak son kez ELVEDA
yayıldı

Arzu

a) Angulation

Keşm Sen Ağn s

b) Tapered ends

k2nk + Kaahet

As illustrated in Table 4, while the number of tapered ends does not show a significant difference between the suicide notes and controls, those of angularities and tremors are significantly higher in the suicide notes (Figs. 3 and 4). It is thought that these augmentations are based on the irremediable psychological state of the victim which gives rise to neuromuscular spasm. As known, an increase in tapered ends gives clues about the writing speed of a person. The similarities in terms of tapered end counts can be based on decisiveness of victim. These results are also thought that the notes are

written under psychological stress, but without any hesitation.

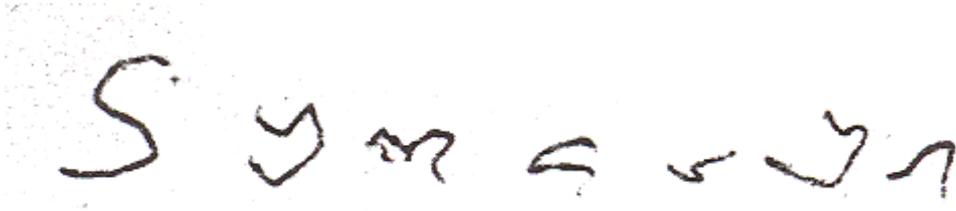
In earlier studies on suicide notes, the protocol sentences were published and the contents of the notes were categorized into different groups (Leenars, 1992; Shields, 2005). Suicide notes may serve some explanatory purpose and may have a therapeutic role in helping the surviving relatives to understand the suicide. While these explanations were made clearly by 12 of 18 victims (Table 6), remaining 6 victims explained indirectly by mentioning about their hopelessness, loneliness and pain (psychache).

Figure 4

Woman, 42 years old, married and a mother of two, physician, committed suicide by drug overdose. Arrows show both name and signature of the victim. Chosen letters from the text shown below.

Sevgili yavrularım, Sevgili Eşim
Sizleri çok seviyorum. Korkulardan, kıskıklardan
kurtulamadığım için sızden ayrılıyorum. Lütfen
beni bağışlayın. Allah'a emanet olun.
Sevgilerimle
Nadire ←
Nadire ←

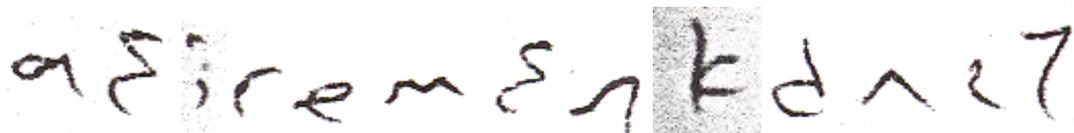
a) Angulation



b) Tremor



c) Tapered ends



In 12 of the examined suicide notes the victim makes an effort to eliminate the possibility of relatives becoming suspected of homicide or instigation to commit suicide by explaining that the act was performed by his/her own will and action. In contrast, three victims accuse one or more identified individuals of forcing him/her to suicide, and demand investigation on the incident (help and instigation to suicide is charged with at least 2 years imprisonment in the Turkish Penal Code).

In 10 suicide notes the victim apologizes from their relatives for the fatal act. In some cases the apology is directed to God and the act is considered a sin. Mystic farewell messages were found in five notes, with phrases like "absolve me and release all your rights on me", "thanks for your guidance". There is an Islamic ritual which contains a similar iterative dialogue between believers whenever they leave each other even for short periods of time. This ritual

comprises an expression of gratefulness to a person or a group for their previous willing service, care and help and a request to give up their rights religiously. It is concluded that these expressions contain renunciation, release, and altruism.

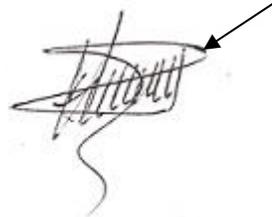
Four victims express intense and hectic feelings mixed with worry for relatives. While three of them conferred the legal custody of their children to close relatives, one specifically entrusted his son to God. In addition, three victims give praise to their relatives and four victims provide detailed information about revenues from their debtor. In contrast to the former, two victims left a list of debts to be paid in their suicide notes.

Three victims were concerned with their body after death and gave instructions such as "bury me in the grave near my uncle's," "keep my ring and necklace in which the name of my darling is engraved," "I am going to donate my organs" (see Fig. 5).

Figure 5

Man, 40 years old, married and a father of three, university degree in engineering, committed suicide by shooting. The arrow shows the signature of the victim and the underlined sentence specifies his will of organ donation. General order and regularity are observed with no significant variation in spacing between characters and words, but moderate variation in spacing between lines.

Ölümünden hiç kimse sorumlu değil yapmış
olduğum işte başarılı olamadım yaşamayı seviyordum
hırsızlık yapmadım kadında satmadım dürüst
olmak için çok uğraş verdim birilerine göre dürüst
olmadım onurum ve manasiyetim kırılmadı Ticarette
bu tür elemansuzlukların olduğunu bilmeme rağmen
yaşam geçim kalmadı diyorum ki Doğrular her
yerde doğru Fakat Doğruyu her yerde söyleyemiyorsunuz
yinede insanları seviyorum Yaşama İluada derken
Organlarımı bağışlıyorum



Suicide notes are the last communications the suicide victims leave. The psychological evaluation of the content of suicide notes may be used as a strong investigational tool to address the question of intent. Leenars points out that note writers may have been forced to write the note. Therefore a suicide note is not always proof of a suicide (Leenars, 1999).

Neuromuscular spasm manifestations such as increase of tremors and angulations may be seen on texts written both under threat and before committing suicide. The count of tapered ends may be used to differentiate between the two situations, because text written under threat shows absence of fluency in writing, and this is caused by the writer elevating the hand from the paper in moments of hesitation. Rhythm and flow of writing is

deteriorated with overwritten and superfluous words. The decrease of tapered ends and blunt-edged writing style are indicators of slow writing. A determined person who commits suicide, on the other hand, writes quickly and fluently and shows a high rate of tapered ends (Table 4).

Evidence from the crime scene and forensic autopsy are extremely important for determining the manner of death. The examination of the hands of the victim of a suspected suicide are important to assess the presence of supportive evidence that the decedent has written a suicide note. If there are smeared or unsmeared ink marks on the palm surfaces and fingers of the victim, comparative ink examination by thin layer chromatography may be performed between the ink from the hand and suicide notes (Taylor, 1991; Hanzlick, 1987). A

handwriting examination to confirm that the note is written in the victim's own handwriting is essential to determine the manner of death.

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Original research

Self-poisoning across ages in men and women – Risk for suicide and accidental overdoses

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Abstract: Self-poisoning with licit or illicit opioids, alcohol or other prescribed drugs affects mostly young people, but also older patients are at risk for self-poisoning and suicide.

This study investigates suicide methods and drugs involved in 2342 Swedish patients and compares different age categories regarding drug use and causes of death included suicide.

All consecutive patients who had been treated for self-poisoning at the emergency department at the Karolinska University Hospital, from 1994 to 2000 were followed up until year 2006 for mortality. Of the whole cohort of 2342 (943 men and 1299 women) at an average age of 38.74 years at admission, 122 (5.2%) had committed suicide during the follow-up period. Standard mortality ratio (SMR) was highest (SMR=70.89) in patients older than 55 years, followed by the youngest age category (15-35 years) (SMR=61.95). Poisoning as suicide method was most common in the younger age categories, while violent methods in older ages. The drugs involved in the suicide cases were predominantly prescribed or illicit opioids in the youngest ages, while alcohol and medications were most common in the elderly.

Patients presented to emergency department due to self-poisoning are at high risk for subsequent suicide in comparison with the general population. Women had significantly lower suicide rate, but no differences between men and women were found concerning type of suicide methods. Patients at emergency department due to poisoning should be offered treatment and follow-up for both drug abuse but also for psychiatric problems in order to prevent repetitive overdoses, suicides and other deaths.

Keywords: Age, alcohol, opioids, self-poisoning, suicide.

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Self-poisoning is a serious problem worldwide. WHO estimated that more than 800 000 persons die by suicide or 11.4 per 100.000 persons per year (WHO, 2014). Illicit and prescribed opioids including heroin have increased during the last decade. From 2000 to 2013, the age-adjusted rate

for drug-poisoning death increased from 0.7 to 2.7 per 100.000 inhabitants. An increase of average 6 % per year was observed from 2000 to 2010 and 37 % per year from 2010 to 2013 (Hedegaard et al., 2015).

Nearly 1 000 persons died in 2013 due to self-poisoning, 10,000 had been treated at hospital and 15,000 had visited an Emergency Department (ED) because of self-poisoning in Sweden with a population of about 10 million, (Swedish Civil Contingencies Agency, 2014). The most common

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means were self-poisoning with alcohol and illicit drugs.

Young people are at high risk for suicide, which was ranked as the second leading cause of death in 15-29 years young people in 2012 (Kutcher et al., 2008; WHO, 2014). Self-harm is a serious risk factor for suicide which often occurs shortly before the fatal self-poisoning (Hawton et al., 2003; Stenbacka & Jokinen, 2015; Jokinen et al., 2016). McMahon et al., (2014) found that drugs involved vary both geographically as well as availability and trends in prescribing. Other studies have shown that people who experienced self-poisoning have received more prescribed medications than the general population (Gjelsvik et al., 2012). A later study by Gjelsvik et al., (2014) claims that the total medication load is higher the year after self-poisoning compared to the year before indicating a high morbidity in these patients. That was especially significant for psychotropic medication (Gjelsvik et al., 2014). Other studies have found mental disorders to be evident in one of three patients irrespective of methods of suicide (Madsen et al., 2013; Chartran et al., 2016) and one third of the psychiatric admissions had a history of deliberate self-harm (Madsen et al., 2016). Alcohol use is often presented in self-poisoning with an estimation of 28-40% of the cases (Lo et al., 2003; Carter et al., 2005; Vaiva et al., 2006).

In this study we aimed to investigate suicide methods and drugs involved in the cohort of 2342 consecutive patients with self-poisoning and compare different age categories regarding drugs involved and causes of death included suicide. We also studied type of drugs involved in fatal accidental poisonings.

Method

All consecutive patients who had been treated for self-poisoning at the emergency department at the Karolinska University Hospital, from January 1, 1994 to 31 of December 2000 were followed up until 1 January 2006 for mortality. The mean age of the patients was 38.74 years (SD=17.94) when enrolled in treatment.

The mean follow-up time was 6.97 years (SD=2.24, range: 0-11 years). A total of 365 persons had died during this period and the causes of death were obtained from Statistics Sweden which keeps the National Swedish Cause of death register for the National Board of Health and Welfare (Cause of Death register, 2009). Most of the death cases

(67%) had undergone forensic autopsy. The other death certificates are based on data from hospitals and Forensic Medicine. The Regional Ethical Review Board in Stockholm did not find any objections to the study (Dnr.98-117).

Statistical analyses

Standard mortality ratio (SMR) was calculated for mortality, by standardizing against the general population for age, both sexes, catchment area and study period, expressed as SMR, with 95% confidence intervals (95%CI).

Kaplan Meier survival curves were conducted for suicide in both men and women and violent suicide methods in the three age categories: 15-34 years, 35-54 and 55+.

Chi-Square tests were conducted when compared different age categories according to methods of suicide, expressed as p-value.

Results

Of the whole cohort of 2342 (943 men and 1299 women) presented at Emergency Department (ED) after self-poisoning, 122 (5.2%) had committed suicide during the follow-up period (Table 1). The proportion of suicide as a cause of death was 33.4 % (122/365). Men had significantly higher rate of suicide than women (6.57% vs. 4.27%) ($p < 0.05$). Figure 1 shows the survival rate of suicide in men and women in which the men's survival curve declined steeply at the beginning of the observation period. The mean age at suicide death was 45.04 years, SD=16.75. The average age was 38.74 years at admission, in which the women were in average one year younger than the men (38.17 vs. 39.58), (Table 1).

When comparing suicide with the general population according to age and catchment-area and study period, the standard mortality ratio (SMR) with 95% confidence intervals for the three age categories (15-34, 35-54 and 55 years or older) were: SMR=61.95 (95%CI, 60.0-63.9), SMR=57.30 (95%CI, 42.46-72.13) and SMR=70.89 (95%CI, 54.39-87.39), respectively.

Poisoning was the most common method of suicide in all age-categories (Table 2).

The youngest patients were more likely to use poisoning than the older age categories ($p=0.026$), while the proportion of hanging was highest in older persons (23.98% vs. 15.38% and 11.36%) ($p=0.43$) and that was also the case for drowning, 23.08% versus 7.69% and 4.55 %, respectively ($p=0.033$).

Table 1. Age at admission and suicide in different age categories in 2342 men and women

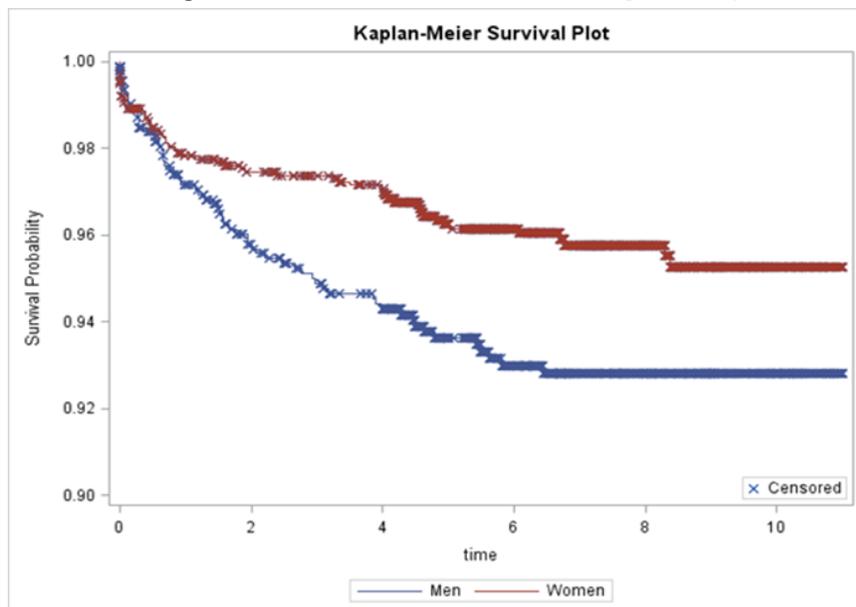
	Men	Women	Total
Number %	943 (40.3%)	1399 (59.7)	2342
Age categories			
15-34	406	713 (63.2%)	1119
35-54	378	458 (54.78%)	836
55+	159	228 (58.9%)	387
Age mean (SD)	39.58 (SD=15.89)	38.17 (SD=17.94)	38.74 (SD=17.94)
Suicide	N (%)	N (%)	N (%)
Age			
15-34	22 (5.42)	22(3.09)	44 (3.93)
35-54	27 (7.14)	25(5.46)	52 (6.22)
55+	13 (8.18)	13 (5.70)	26 (6.72)
Total*	62(6.57)	60 (4.27)	122 (5.21)

(*) chi square=5.961, p= 0.015.

Table 2. Suicide methods in different age categories

Suicide methods	Age 15-34 years N=44 %	Age 35-54 years N=52 %	Age 55+ years N=26 %	Sign p-value
Poisoning	77.27	59.62	46.15	P=0.026
Hanging	11.36	15.38	23.98	P=0.43
Drowning	4.55	7.69	23.08	P=0.033
Train	2.27	11.54	0	P=0.05
Shooting	2.27	0	3.85	P=0.41
Others	2.27	5.77	3.85	P=0.69

Figure 1. Suicide in men and women during follow-up



The Kaplan-Meier analyses (Fig.2) demonstrates that the patients between 15-34 had the highest survival rate of suicide by violent methods, while the oldest age category died more frequently of violent suicide methods. Opioids were the most commonly used drug for

self-poisoning in the youngest age-category, while alcohol use in those 35-54 years of age (Fig.3). In the youngest age-category, illicit drugs were most prevalent, while in older categories alcohol and other prescribed medications were more prevalent.

Figure 2. Violent suicide method in different age groups

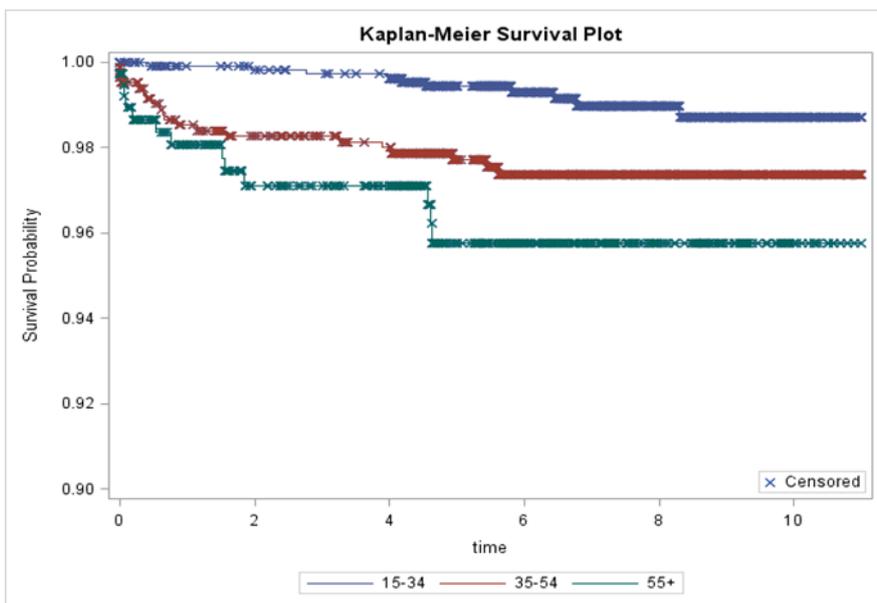
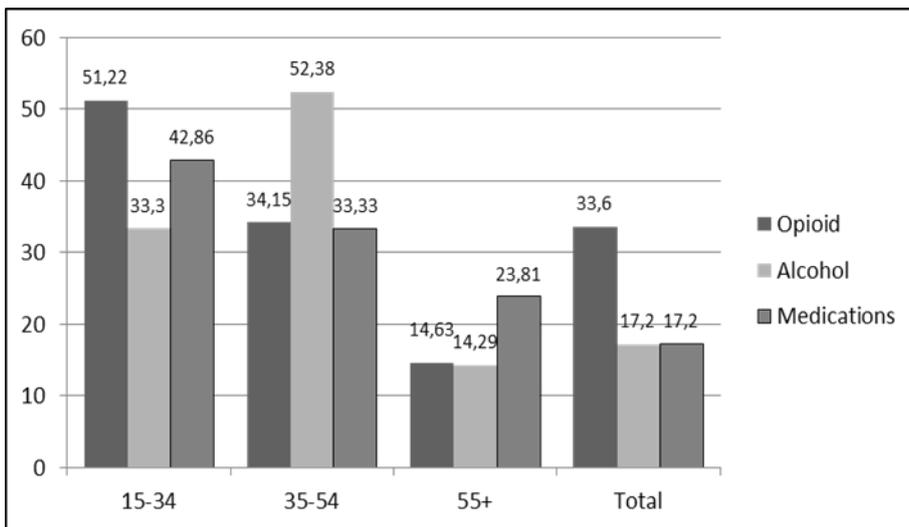


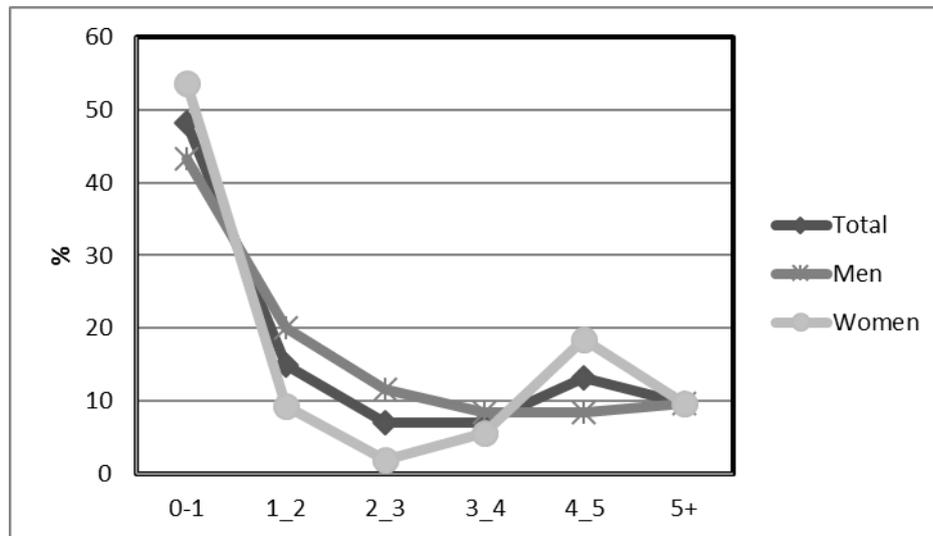
Figure 3. Substances involved in suicide by age. Percent



Multiple drugs (2+) were evident for nearly one third (26 %) of the patients. A large proportion of those who had used violent methods had combined suicide method with poisoning (42%). For example, more than half of those who had committed suicide by drowning had also taken other substances (61%) such as alcohol and opioids.

Nearly half (48.3%) of the suicide cases occurred in the first year after the admission to ED because of self-poisoning and 72% during the first two years. However, the risk of suicide persisted throughout the entire observation period. Nearly 20 percent of the female suicides occurred after four years (Fig.4).

Figure 4. Time-lag between admission and suicide.



Accidental overdoses

Thirty four persons (5 women and 29 men) had unintentionally died due to overdoses. The differences between men and women was significant ($p < 0.0001$). The drugs involved were heroin, other opioids and alcohol. Most of the overdoses were with multiple drugs. The age at death due to accidental overdoses was 41.5 years ($SD = 10.37$, range: 22-62 years).

The risk for accidental overdose was highest for the age category 35 to 54 years ($SMR = 246$, 95%CI, 216.15-277.75), while the youngest patients (15-34 years) had the lowest risk ($SMR = 125$, - 51, 95%CI, 103.55-147.47). The oldest age category had the risk: $SMR = 145.39$, (95% CI, 121-169).

Other causes of deaths: circulatory diseases ($n = 85$), tumor diseases ($n = 36$), respiratory diseases ($n = 38$) and accidents ($n = 8$) were the most common causes of deaths. The deaths due to natural causes were evident for 1.86% in the youngest age category, 9.95% in patients 35-54 and 40.17% in the oldest age category. The risk (SMR) for natural causes of death was 5.39, (95%CI, 0.841-9.95) for the youngest age-category (15-34 years), followed by 38.03, (95%CI 29.94-50.11) for patients 35-54 years and 12.87, (95%CI 5.83-19.90) for the oldest patients.

Discussion

In this study we investigated the risk of suicide and the choice of suicide method after self-poisoning in a consecutive cohort of 2342 patients admitted to ED in Stockholm with a follow-up of about 7 years. In the present study, the proportionate mortality (the percentage of the dead who died by suicide) was 33.4% of all deaths among patients admitted to ED, which is high. We found, as expected, that men

died significantly more often of suicide than women and that was true in all age categories. However, women were more in numbers than the men in the cohort (59.7% vs.40.3 %) which is well in line with the literature of gender differences in suicidal behavior (Bertolote & Fleischmann, 2002; de Beurs et al., 2016; Canner et al., 2016). It may indicate that women search treatment more often which have been demonstrated in previous studies (Reith et al., 2003; Peiris-John et al., 2013).

Self-poisoning seems to be often a repetitive behavior, which in turn increases the risk of both intentional and non-intentional overdoses (Kapur et al., 2002; Owens et al., 2002; Reith et al., 2004; Carroll et al., 2014; Finkelstein et al., 2015). In this consecutive cohort of patients presenting at ED after self-poisoning, over 63% had used poisoning as suicide method and 9% had died due to accidental overdoses mainly due to heroin, other opioids or alcohol or a combination of these drugs. The methods of suicide seem to vary between different countries and different ages (WHO, 2016), but self-poisoners are considered at high risk of suicide with poisoning as a suicide method. In a systematic review by Owens et al., (2002), it was found that a quarter of suicides was preceded by non-fatal self-harm in the previous year and another study showed that half of the suicide cases had previous experience of non-fatal self-harm and shortly before a fatal act (Gairin et al., 2003; Geulayov et al., 2016).

In this study, younger patients used significantly more often poisoning as suicide method in comparison with the elderly who used more violent methods i.e. drowning, hanging etc. Our finding is in line with reports from register based studies reporting that over 80% of elderly suicide victims

had committed suicide using a violent method (Karvonen et al., 2008). Further, illicit drugs as heroin were more common in the younger ages, while alcohol was more common in the older suicide cases. Notably, combinations of both violent methods and poisoning were common in suicide cases in this study.

Research has claimed that self-harm including self-poisoning is associated with not only suicide but also other negative outcomes such as poorer physical and mental health and natural causes of deaths, which mostly affects older people (Carter et al., 2005). Circulatory diseases, cancer, respiratory diseases and accidents were common natural causes of deaths in this study. The risk for natural causes of death was mostly elevated for patients in the age-category 35-54 compared to the general population (SMR=38.03). This finding indicates that self-poisoning is associated not only to suicide but also to higher risk of dying of natural causes (Karasouli et al., 2011). However, even though the risk of natural causes of death was elevated even in the youngest age-category, the finding was not significant due to the relatively low number of events leading to low power to detect the risk.

We found high risks (SMRs) of suicide when compared with the general population. That was true for all age categories, but the oldest patients (55+) carried the highest risk (SMR=70.89). The youngest age group had more than 60 times higher risk to die due to suicide compared to the general population (Owens et al., 2002; Jokinen et al., 2016).

Accidental overdoses, both fatal and non-fatal, seem to be common in poly drug users, often opioids with different combination of other drugs such as benzodiazepines, central stimulants and other drugs (Darke et al., 2014). We found that 9% of all death cases were accidental self-poisonings. The risk for fatal accidental self-poisoning was high in all three age-categories compared to the general population. The highest risk had patients in the ages 35-54 years (SMR=246.95), which possibly could be explained by previous periods of substance abuse with several drugs involved, which increase the risk of both fatal and non-fatal overdoses (Gossop et al., 2002; Kerr et al., 2006). In Sweden, deaths because of overdose have increased during the last decade and the increase is mainly due to both licit and illicit opioids (Leifman, 2016).

Nearly half of the suicide cases occurred during the first year after admission, but the risk was elevated for a long period (Fig.2). For instance, females had a small peak after five years and their male counterparts after three years indicating that there are other factors associated with the risk of suicide

such as periods of substance use and mental health problems (Finkelstein et al., 2015). The results also indicate that the relevant authorities and healthcare institutions that meet patients with previous experience of self-poisoning should consistently work longitudinally with tertiary prevention (Finkelstein et al., 2015).

Advantages and limitations

The main advantages is the use of a consecutive cohort of all patients who sought treatment for self-poisoning at ED between the years 1994 and 2000 representing a more general cohort of severe overdoses regardless of intentions. Both men and women were included. The women were more in numbers that visited ED which has been demonstrated in prior studies (Towsend et al., 2001; Buykx et al., 2010). We have also included three age categories in the study which allows comparison between groups concerning suicide. Suicide attempt has been considered as the strongest risk factor for suicide, why the intention of self-poisoning is important in order to prevent later suicide (Darke et al., 2014; Runeson et al., 2010; Stefansson et al., 2012). We also analyzed the risk of natural causes of death, which gives a greater insight of causes of death for people with previous non-fatal self-poisoning. We had no knowledge of what type or combination of substances involved before the visit to the ED. Furthermore, the information of follow-up treatment of patients was lacking, which would have been valuable information for preventive measures.

Conclusions

In conclusion, the female patients had a lower (4.27%) suicide rate than men (6.57%), while no significant difference was found between men and women concerning methods of suicide.

The same pattern existed for the proportion of men and women who overdosed (0.3 and 3.1%). The youngest age group was more likely to use illicit opioids and poisoning as a method of suicide, while the older persons used more violent methods. Poly drug use seems to be common in self-poisoners and that increase the risk for accidental poisoning (Darke et al, 2014). Suicide death after self-poisoning was markedly increased compared to the general population, which also was the case for death due to accidental overdose and natural causes. This knowledge indicates a great need for both preventive measures but also monitoring and offer appropriate treatment such as drug treatment and if necessary referral to psychiatric counseling and treatment.

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Original research

Suicide behind the wall: A national analysis of corrections officer suicide

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Abstract: There is little research on suicide among corrections personnel. The present study examined age-adjusted proportionate mortality ratios (PMRs) for suicide among corrections personnel compared to the U. S. working population in 23 states during 1999, 2003-2004, and 2007, based on the National Occupational Mortality Surveillance database (NOMS). Age adjusted PMRs for total and white male corrections personnel suicides were significantly elevated (PMR=141, 95% CI=111-178 and PMR=134, 95% CI=102-173 respectively). White corrections female PMRs were nearly double those of U.S. female workers (PMR=199, 95% CI=91-377), although a small number. Overall, corrections personnel have a significantly higher age-adjusted risk for suicide. Ratios were particularly high among females. Additional study is needed on potential precipitants and occupational risk factors associated with suicide among corrections personnel.

Keywords: *corrections personnel, suicide, law enforcement, gender, race, epidemiology*

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As mandated by their occupation, corrections officers spend a good part of their day within the walls of correctional facilities. There is considerable responsibility associated with this occupation. Officers must keep vigilance over inmates and often unpredictable behaviors such as violence against officers and other inmates, forging hand-made weapons, attempts at escape and suicide attempts (Hill, 1982). There is also the danger of disease transmission from inmates such as HIV with the estimated overall rate of AIDS among prison inmates at more than 2.5 times the rate in the United States general population (Maruschak, 2006).

Under such work conditions, it is likely that corrections personnel experience chronic stress. A study of five jails found that correctional officers

self-reported high levels of stress (Stohr et al., 1994). Corrections stress has been associated with poor training and high turnover rates which limited long term peer group cohesiveness (Philliber, 1987). National research indicates that corrections officers are among the most dissatisfied workers in the labor force (Cullen, et al, 1998). Other stress factors include high work demands coupled with low control, administrative stress, shift work, longer contact hours with inmates, job dissatisfaction, dangerousness, fear of legal liability, and low social support (Dowden & Tellier, 2004). Cheek and Miller (1983) found that the average rates of divorce and stress related illnesses (i.e., heart disease, hypertension, and ulcers) for corrections officers were high, while another study reported that the average life span of corrections officers was sixteen years lower than the national average (Cheek, 1984). According to Dowden and Tellier (2004), of the problems facing corrections officers, the

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perceived dangerousness of the position was the most stressful.

In addition to chronic work stress, corrections officers may be at increased risk for posttraumatic stress disorder (PTSD). A study by Spinaris, Denhof and Kellaway (2012) found an overall prevalence rate of 27% for PTSD symptoms experienced among corrections officers over the past 30 days. Officers who reported high PTSD symptoms reported significantly more exposure to workplace violence, injury and death, higher levels of depression, anxiety, and stress, more absenteeism, and less life satisfaction.

Corrections work stress can spill over onto family relationships. A study by the Correctional Management Institute of Texas at Sam Houston State University (2014) of 441 correctional officers found that the demands and tensions from work negatively impacted their home life. Hepner (2005) commented that the corrections environment contributed to dysfunction in the officer's personal lives and relationships. Obidoa, Reeves, Warren, Reisine and Cherniack (2011) found an association between correction officer depression and family conflicts. Black (1982) reported that correctional officers tended to displace work frustration onto family members.

Despite previous evidence of inordinate stress, posttraumatic stress, and family relationship disruption among correction officers, there is a paucity of suicide research on this occupational group. The majority of research on suicide within corrections institutions is based on prevention of inmate suicides (Stack & Tsoudis, 1997; Lester, 1993; Liebling, 1993). To our knowledge, only two studies have empirically examined suicide rates *specifically focused* on corrections officers. Stack and Tsoudis (1997) analyzed suicide data from 21 states which reported occupational data on the deceased in the 1990 National Mortality Detail File. 7.14% of the officers died of suicide in 1990 compared to 4.51% of the general working age population. Controlling for the other demographic variables, correctional officers were 39% more at risk of death from suicide (vs. natural causes) than non-correctional officers.

The New Jersey Police Suicide Task Force (2009) noted that New Jersey corrections officers committed suicide at over double the rates of police officers and the general New Jersey population. There were fifty five suicides among this population between 2003-2007. Of these, sixteen (30%) were corrections officers. For males ages 25-64, suicide rates were as follows; 34.8/100,000 for corrections, 15.1/100,000 for police, and 14/100,000 for the general population. Access to lethal means

(firearm) was a prominent factor, as officers were far more likely to be committed with a firearm than suicides among similarly aged males.

This study was part of a larger study on suicide on law enforcement (see Violanti, Robinson & Chen, 2013) and examines corrections staff suicide on a national level during 1999, 2003-2004, 2007. Data is based on the National Occupational Mortality Surveillance system (NOMS), maintained by the Center for Disease Control and Prevention's National Institute for Occupational Safety and Health (CDC/NIOSH) which contains cause of death data for workers by occupation and industry. Corrections officer deaths were evaluated to determine whether suicide risk was elevated compared the general U.S. working population.

Method

Death certificate data for 1.46 million decedents were contributed by 23 U.S. states to the National Occupational Mortality Surveillance System (NOMS) maintained by the National Institute of Occupational Safety and Health (<http://www.cdc.gov/niosh/topics/surveillance/NOMS/>) Last accessed October 28, 2013). Reporting states were Colorado, Georgia, Idaho, Hawaii, Indiana, Kansas, Kentucky, Michigan, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Dakota, Ohio, Rhode Island, South Carolina, Texas, Utah, Vermont, Washington, West Virginia, and Wisconsin.

Identification of Deaths

After edits of the data and elimination of the unemployed or those with no reported occupation or industry, all deaths aged 18-90 years due to suicide (intentional self-harm, ICD-10 codes X60-X84, Y870) were identified from the study population and used to create analysis files that include age, sex, race, underlying cause of death, and usual occupation. Law enforcement occupations of interest were specified as "correctional officers" (2000 Census codes 370,380 and 1990 Census codes 415,424). The comparison population was deaths in all occupations.

Analysis: Proportionate Mortality Ratios (PMR)

Proportionate mortality ratio analysis based on the underlying cause of death was used to evaluate the suicide patterns by occupation and industry and included race- sex- specific age-adjusted PMRs were calculated for Caucasian, African-American, and Hispanic persons. PMRs are calculated by comparing the proportion of deaths from a specified cause within a specified occupation or industry group with the proportion of deaths due to

that cause among the comparison population, age-adjusted after stratification on race (Caucasian and African-American).

Proportionate mortality ratio analysis based on the underlying cause of death was used to evaluate the suicide patterns by occupation and industry. Race-, sex- and ethnicity-specific age-adjusted PMRs were calculated for Caucasian, African- American, and Hispanic men and women using a computer program developed at NIOSH (Dubrow et al., 1987). This program was designed to calculate PMRs for occupation or industry specifically for population-based data. It calculates PMRs by comparing the proportion of deaths from a specified cause within a specified occupation or industry group with the proportion of deaths due to that cause among the comparison population, and age-adjusts after stratification on race (Caucasian and African-American) and ethnicity (Hispanic). A PMR above 100 is considered elevated over the average for all occupations. Ninety-five percent confidence intervals (95% CI) for the observed PMRs were calculated. If the observed number of deaths was 1000 or less, the 95% CI was computed based on the Poisson distribution (Bailar & Ederer, 1964); otherwise, test-based CIs were calculated using the Mantel and Haenszel χ^2 test (Mantel & Haenszel, 1959). Statistical significance ($p < 0.05$ for a two-

sided test) and 95% CIs should be evaluated in the context of hypothesis generation because multiple comparisons were made (Rothman, 1986).

A PMR above 100 is considered elevated over the average for all occupations. PMRs indicate whether the proportion of deaths due to a specific cause appears to be high or low for a particular occupation and estimate the death rate. Ninety-five percent confidence intervals (95% CI) for the observed PMRs were calculated. Due to confidentiality agreements with states, the number of deaths was reported in the tables as '<5', when a cell is based on less than 5 deaths.

Results

Table 1 displays PMRs for the total number of correction personnel suicides and suicides listed by race and gender for the years 1999, 2003-2004, and 2007. There were 73 total suicide deaths among corrections personnel, resulting in a significantly higher PMR for suicide than expected (PMR=141, 95% CI=111-178). In total, the PMR represents a 41% higher risk for suicide among correction personnel compared to all decedents in the study population who were employed during their lifetime.

Table 1. Proportionate Mortality Ratios (PMRs)*** for Suicide: Corrections officers by Race and Sex, Ages 18-90, 23 U.S. States. CDC/NIOSH National Occupational Mortality Surveillance, 1999, 2003-2004, 2007.

TOTAL SUICIDES									
Deaths		PMR	95% CI		****				
73		141**	111-178						
SUICIDES- RACE AND SEX: MALES									
Caucasian Males			African-American Males			Hispanic Males			
Deaths	PMR	95% CI	Deaths	PMR	95% CI	Deaths	PMR	95% CI	
59	134*	102-173	<5	85	18-249	<5	99	20-289	
SUICIDES-RACE AND SEX: FEMALES #									
Caucasian Females			African- American Females						
Deaths	PMR	95% CI	Deaths	PMR	95% CI				
9	199	91-377	<5	-----	-----				

Deaths=22,831
ICD (10) codes x60-X64, Y870.
sig.* $p < 0.05$ sig.** $p < 0.01$
***A PMR above 100 is considered elevated over the average for all occupations.
**** 95% Confidence Intervals.
Data on Hispanic female corrections suicide not available

Proportionate mortality for suicide was also examined by race and gender. Among white males, 59 deaths were recorded in the corrections category, representing a significantly higher risk for suicide than expected for this population (PMR=134, 95% CI=102-173) (Table 1). There were nine suicides among white female corrections personnel (PMR=199, 95% CI=91-377). Although not significantly elevated, this PMR suggests an almost two-fold risk of suicide among female corrections officers. Deaths for African-American and Hispanic male corrections personnel numbered less than five and were not reported for reasons of confidentiality. There were less than five suicides among African-American corrections females and not analyzed for identity confidentiality reasons.

Discussion

The present study assessed corrections age-adjusted suicide risk compared to the general U.S. working population utilizing the CDC/NIOSH NOMS database. Overall, PMRs for suicide were significantly higher than the general U.S. working population for all corrections officers combined (PMR=141, sig. $p < 0.01$, 95% CI=111-178), with Caucasian males representing the majority of suicides in this occupation (PMR=134, $p < 0.01$, 95% CI=102-173). Interestingly, the risk of suicide for female corrections officers was approximately 2-fold higher than women in the general population (PMR=199). Although not significant, this result suggests that women officers may be at risk for suicide by virtue of this occupation. This result should be interpreted with caution since there are such a small number of suicides among correctional females. Women officers are generally subjected to additional stressors in male dominated corrections work. Female officers are likely to encounter higher levels of harassment, overt hostility, and other negative social interactions on the job (Martin, 2004). He, Zhao and Ren (2005) comment that more research is needed to further explore the relationship between race, gender, police organizational culture, and the occupational stress of officers.

Work exposures responsible for the elevated proportionate suicide mortality in this occupation should be considered in future research. For example, Dowden and Tellier (2004) listed several predictors of corrections stress such as age, high work demands and low control, dangerousness and low social support, which may precipitate depression and subsequent suicidal thinking. Violanti, Fekedulgen, Andrew, Hartley, Manatskanova, and Burchfiel (2008) examined the association between depressive symptoms and

suicide ideation in law enforcement officers. For each standard deviation increase in depression symptoms, the prevalence ratio (PR) of suicide ideation increased 73% in female officers (PR = 1.73, 95% CI = 1.32-2.27) and 67% in male officers (PR = 1.67, 95% CI = 1.21-2.30).

PTSD has also been associated with suicide in previous research. As pointed out by Denhof and Spinaris (2013) in their study on depression and PTSD among U.S. corrections officers, PTSD and stress contribute independently to suicidal behavior. Others have reported similar results (Oquendo, et al., 2003; Sareen, Houlihan, Cox, & Asmundson, 2005). A recently published longitudinal study of PTSD showed that elevated lifetime rates of full and partial PTSD among police officers were associated with elevated suicide rates (Pietrzak, Goldstein, Southwick, and Grant, 2011). Studies of veterans with PTSD have reported an increase risk of suicidal behavior (Ferrada-Noli, Asberg, Ormstad, Lundin, & Sundbom, 1998; Freeman, Roca, & Moore, 2000).

Alcohol misuse has been characterized as a problem among law enforcement occupations of which corrections is an integral part (Richmond et al., 1998). Alcoholism is the second most common diagnosis among suicides, occurring more often in men than in women (Joiner & Rudd, 1995; Volpicelli, Balaraman, Hahn, Wallace, & Bux, 1990). The law enforcement culture reinforces the use of alcohol as a social and psychological device for coping with the stresses of the job (Violanti, 2004). Violanti, (2004) found that taken together, the comorbid risk of high PTSD and alcohol use increased the odds of suicide ideation approximately ten times over law enforcement officers who had lower trauma levels. These results concur with previous work (Carlier, Lamberts, & Gersons, 2000).

Advantages and Limitations

The PMR can be affected by disproportionate increased or decreased mortality from other causes of death. For example, very high PMRs due to large causes of death such as heart disease or injury can lower cancer PMRs. (McDowall 1983.) However, PMR comparison with other working populations limits the impact of the healthy worker effect—i.e., all causes mortality in workers is low during the working years compared to the general population due to selection processes in employment (Park., Maizlish, Punnett, Moure-Eraso, & Silverstein, 1991; Checkoway, Pearce, & Kriebel, 2004). Corrections suicide data may be further biased by the misclassification of suicides, resulting in lowered rates (Phillips & Ruth, 1993; Aldridge & St. John, 1991; O'Carroll, 1989; Pescosolido &

Mendelsohn, 1986). A previous study found that approximately 17% of law enforcement suicides were misclassified as suicides; determined by a panel of three medical examiners (Violanti, Vena and Marshall, 1996).

The impact of corrections occupationally based factors and their association with the etiology of suicide have not yet been fully explored. Unfortunately, the NOMS database does not contain any control variables that are immediately accessible. It is necessary to submit a personal request to NOMS in order to access any protected confidential data. There is public use data available from NOMS, but it does not contain detailed information that might be required to perform more complex statistical analysis. Denhof and Spanaris (2103) point out that additional information on conditions associated with elevated suicide risk remain to be collected within the corrections occupation, such as rates broken out by facility/agency type, job role/type, and work environment conditions (e.g., level of exposure to violent experiences, job attributes, social support, decision latitude, and workload). These same authors suggest programs designed to enhance the understanding of work culture, educate workers as the negative effects of stress and trauma, and encourage leadership to model healthy work behaviors (Denhof & Spanaris, 2013).

There has been some attention given to corrections officers in film regarding suicide (Stack & Bowman, 2011). Such films may be of use in ordering the etiology of suicide among persons in this occupation.

Future research should include etiologic studies that can evaluate these potential occupational factors and precipitants that lead to increased suicide risk. This can inform preventive actions to reduce the risk of suicide in the corrections occupation.

Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the National Institute for Occupational Safety and Health.

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- Raising awareness about suicide as important public health issue and fighting the stigma surrounding it;
- Improving understanding of risk and protective factors;
- Sharing experience and knowledge on suicide prevention;
- Disseminating best practices on management and treatment of the suicidal patients.

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