

Suicidal Attempts Admitted to a General Hospital in the Western Galilee: An Inter-Ethnic Comparison Study

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Abstract: *Background:* Deliberate self-harm is a relatively frequent cause of consultation in the emergency room of general hospitals. Despite its importance, few epidemiological studies of self-injury in Israel have been carried out, and of these, they mostly covered selected population groups. *Objectives:* To provide epidemiological data on self-harm in patients examined in the emergency room of a general hospital in the Western Galilee, with special emphasis on differential sociodemographic and clinical characteristics of the Arab and Jewish subjects. *Methods:* Demographic, clinical, and self-harm characteristics were extracted from hospital files for people aged 18 years and older admitted to the general hospital in Nahariya, Western Galilee, over a 24-month period (January 1996 to December 1997) following a suicidal attempt. Chi-square statistics, two-tailed t-tests, and logistic regression analyses were used to test the significance of inter-ethnic differences in risk factors. *Results:* The overall incidence rate of suicidal attempts was 16.7 per 100,000 population of Northern District in 1996 (Arabs, 24.4 and Jews, 11.0); or 37.6 per 10,000 admissions (Arabs, 44.2 and Jews, 30.3). Among the Jewish male subjects, attempts rose markedly after the age of 40, while among their Arab counterparts the age distribution was even throughout all age groups. Among Jewish females, admissions for self-harm rose gradually with age, while among the Arab women there was a peak at the 20–29 year age group. Both ethnic groups differed significantly in their sociodemographic and clinical profiles, but they shared common characteristics with regard to the attempt. *Conclusions:* Our findings suggest differential ethnic patterns of risk factors for self-harm. Further in-depth investigation of deliberate self-harm is warranted to better explore these factors.

Introduction

Deliberate self-harm, often a clinical precursor of future suicide, constitutes both an expression of severe psychological distress and a wish to escape from a troubling situation (1). Although most attempts inflict little actual physical harm to health (1, 2) and do not come to the attention of medical services (3), more serious attempts are a relatively frequent cause of consultation to the emergency room of general hospitals (3, 4). Of the means of attempts, self-poisoning has potentially serious consequences: follow-

up studies have found that between 3% and 10% of self-harm patients whose first attempt was by self-poisoning eventually kill themselves (5–7). The incidence of deliberate self-harm has increased in the U.K. (8, 9), other countries of Europe (10, 11), in the U.S.A. (12, 13) and in Australia (14). In addition, the gender and age distribution for suicidal behavior has changed, with marked increases in both suicide and self-harm in young men and a reduction in the female/male ratio for deliberate self-harm (8,15).

There are few epidemiological studies of self-injury in Israel (16); most of them deal with adolescent

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populations (16–20). These studies reported that self-poisoning constituted about 90% of the preferred means of attempt. Attempts occurred most frequently in depressed females during the high school years, usually in the context of family dysfunction.

Despite the public health importance of attempted suicide, we identified only one epidemiological study published 20 years ago (21) on the population of the city of Haifa. This survey was based on data collected at the Rambam Medical Center during 1977–1979. They found a relatively high incidence rate, an average of 84 per 100,000 population aged 15 and older. The rate was found to increase up to 170/100,000 in “areas of social distress” and declined to 56/100,000 in areas labeled as advantaged. The high-risk population included women below age 29 years; of Oriental origin; with elementary education; living in lower class areas; and with mental, family, environmental and social problems. Although Haifa is an ethnically mixed city, the study did not include Arab-Israelis. Thus, inter-ethnic differences that may account for a substantial variance in suicidal behavior (22, 23) have not yet been explored in Israel.

The objective of this study was to describe selected epidemiological features on patients who attended the emergency room of a general hospital in the Western Galilee following self-harm, with special emphasis on the differential socio-demographic and behavioral characteristics of the Arab and Jewish subjects.

Methods

Data source. The data for this study were gathered from hospital records for people aged 18 years and older (excluding those serving in the Army) who were admitted to the emergency department of the general hospital in Nahariya on account of self-harm. Self-harm attendances were defined as those resulting from an injury or harm of any kind that was reported by the patient or by an accompanying person as self-inflicted or as ascertained as such by the medical staff. The period of observation covered 24 months from January 1, 1996 to December 31, 1997. Demographic information on the subjects, previous self-harm episodes, and diagnosis made upon ad-

mission by a psychiatrist using ICD-10 criteria and previous contact with psychiatric services were extracted from the records.

The setting. The hospital that participated in this study is a modern public general hospital. It is located in Nahariya, the Western Galilee Health Authority area, and covers a population of over 600,000 individuals, of whom 67% are Israeli Arabs. The Nahariya hospital has 609 medical beds and 20 specialized wards. The research project received approval from the ethics committee of the hospital.

Analysis

Because suicidal attempters could be hospitalized as a result of their action in at least two other hospitals that also serve the Northern District inhabitants, we calculated the incidence rates of suicidal attempts using different denominators. The first denominator was defined as the number of inhabitants of the Northern District area (Arab Israelis and Jewish Israelis, separately) in 1996 and 1997, separately; this provided a picture of the likelihood of a person in the general population who attempted suicide. The second one was defined as the number of people who were admitted to the given hospital during the same time periods (Arab Israelis and Jewish Israelis, separately); this provided a picture of the likelihood of a person under the care of the given health service who attempted suicide. Chi-square statistics and two-tailed t-tests were used to test the significance of differences in proportions and means and standard deviations, respectively. A probability level less than 0.05 was chosen to indicate statistical significance at bivariate level of analysis. In addition, logic regression analysis was performed with ethnicity as the dichotomic dependent variable (Arab/Jewish) and putative risk factors as independent variables. These included the variables that did differ significantly between the groups at bivariate level: gender, age group (18–20, 20–29, 30–39, and 40 years and older), marital status (married vs. unmarried), history of contact with mental health services (yes/no), diagnostic category (mood/anxiety disorders, schizophrenia, personality disorders, no diagnosis), and communication of suicidal intention (others present, others expected to appear, unknown). Education was not included due to multiple missing data on this

variable among the Arab group. In addition, gender by age interaction was entered in the regression model. Backward stepwise selection was carried out on each model with variable removal *p*-values of .10 to find the most parsimonious reduced model for the prediction of differences in risk factor between the

Arab and Jewish groups. Statistical significance in the logistic regression models was assessed using the Wald statistic model. All analyses were performed using the STATISTICA-6.0 software packet (StatSoft, Inc., Tulsa, OK, USA).

Table 1. General hospital patients who attempted suicide by ethnic, sociodemographic and clinical characteristics

Characteristic	Jewish Patients (N=89)		Arab Patients (N=86)		Total (N=175)	
	N	%	N	%	N	%
Gender ^a						
male	38	42.7	25	29.1	63	36.0
female	51	57.3	61	70.9	112	64.0
Age, ^b yr., mean (SD)	44.1±20.8		27.7±7.6*			
18–20	9	10.1	19	22.3	28	16.1
20–29	16	18.0	37	43.5	53	30.4
30–39	21	23.6	21	24.7	42	24.1
40+	43	48.3	8	9.41	51	29.3
Years of education, ^c mean (SD)						
6–8	4	10.0	21	61.8	25	35.2
12 and over	33	90.0	13	38.2	46	64.8
Marital status, ^d n (%)						
Single	29	32.6	36	41.9	65	37.1
Married	40	44.9	41	47.7	81	46.3
Divorced/Widowed	20	22.5	9	10.4	29	16.6
Diagnosis (ICD-10) ^e						
Mood and anxiety disorders	24	27.0	5	5.8	29	16.6
Schizophrenia and other psychoses	4	4.5	4	4.6	8	4.6
Personality disorders	10	11.2	6	7.0	16	9.1
No diagnosis	51	57.3	71	82.6	122	69.7
Prior contact with psychiatric services ^f						
Yes	31	34.8	13	15.1	44	25.2
No	58	65.2	73	84.9	131	74.8

^a $\chi^2=3.52$, df=1, *p*=0.06

^b $\chi^2=35.84$, df=3, *p*=0.0000

^c $\chi^2=35.84$, df=1, *p*=0.0000

^d $\chi^2=7.59$, df=2, *p*=0.05

^e $\chi^2=16.68$, df=3, *p*=0.0008

^f $\chi^2=9.03$, df=1, *p*=0.003

* two-tailed *t*-test: *t*-value=6.89, *p*=0.0000

Results

Self-harm incidence. A total of 199 cases of self-harm were identified during the study period. We estimated the yearly incidence rate of attempted suicide acts for the entire sample, and for Arab and Jewish subsamples separately, based on the general population statistics (Statistical Abstract of Israel 1997/8, Central Bureau of Statistics, Jerusalem, 1997/8). These figures were, respectively, 16.7, 24.4 and 11.0 per 100,000 population of Northern District in 1996; and 15.0, 20.5 and 11.0 per 100,000 population in 1997. We recalculated the yearly incidence contact rates based on the number of hospital admissions; the figures were, respectively, 37.6, 44.2 and 30.3 per 10,000 admissions in 1996; and 30.4, 31.8 and 28.6 per 10,000 admissions in 1997.

Patient characteristics. Table 1 presents the socio-demographic characteristics and selected clinical features of 175 patients (24 patients were excluded because of incomplete protocol data). The study sample comprised 36% males ($N=63$), with a mean age of 35.8 years ($SD=9.5$, range 17–92 years). Most patients were married ($N=81$; 46.3%). The mean years of education was 10.2 ($SD=2.7$), 37 (21%) had at least one previous self-harm episode, and 44 attempters (25%) had previous contact with psychiatric services.

Inter-ethnic comparisons. The subsamples significantly differed in all the selected characteristics examined as follows:

Gender. The proportion of women was higher among Arab than among Jewish subjects (71% vs. 57%); this difference, however, was only marginally statistically significant ($\chi^2=3.52$, $df=1$, $p=0.06$).

Age. There was a significant difference in mean age between Arab and Jewish groups (27.7 ± 7.6 vs. 44.1 ± 20.8 ; t -value=6.89, $p=0.0000$). The age groups 18–20 and 20–29 years were overrepresented among the Arab group, while the age group 40 years and older prevailed in the Jewish group ($\chi^2=35.84$, $df=3$, $p=0.0000$).

Marital status. There was a significant between-group difference ($\chi^2=7.59$, $df=2$, $p=0.05$). The proportion of single patients was higher among the

Arab patients (42% vs. 33%) and divorced/widowed category among their Jewish counterparts (22% vs. 10%). The proportion of married subjects was similar in both groups (48% and 45%, respectively).

Education. Thirty-eight percent of the Arab patients had 12 years and over of schooling, while among the Jewish patient this proportion approached 90% ($\chi^2=35.84$, $df=1$, $p=0.0000$).

Psychiatric diagnosis. Diagnosis was recorded in a minority of subjects (Arabs, 18% and Jews, 43%). The proportion of patients with combined diagnostic category of mood and anxiety disorder was substantially higher among Jewish attendees than among the Arab group (27% vs. 6%, $\chi^2=16.68$, $df=3$, $p=0.0008$). The remaining categories, schizophrenia, other delusional psychoses and personality disorders, showed similar proportion in both groups.

Prior contact with mental health services. A substantially smaller proportion of Arab than Jewish patients had previous contact with mental health services (15% vs. 35%, $\chi^2=9.03$, $df=1$, $p=0.003$). Previous contact with mental health services strongly correlated with the number of patients who were diagnosed in both groups. Thus, 31 of 38 diagnosed cases (82%) in Jews had such a contact; for Arabs, this figure was 87% (13 of 15).

Self-harm characteristics. Table 2 presents selected characteristics of self-harm in the total sample and compares the two ethnic subgroups with regard to the place where the suicidal attempt occurred, communication of suicidal intention, methods of self-harm, and numbers of prior self-harm episodes. Of the 175 cases, 162 (92.6%) attempted suicide with different substances (medication, 156, and toxic chemicals, 6) and 13 (7.4%) used different means: self-laceration (wrist cutting), 8; hanging, 3; swallowed object, 1; and burning, 1.

The vast majority of attempts, 98%, were committed at home. Also, most of the attempts were performed either in the presence of other people (70%) or when there was an expectation that somebody will arrive (23%). For most attempters (79%), the index act was the first one in life, for 9%, the second, and for 13%, the third one or even subsequent.

Table 2. General hospital patients who attempted suicide by ethnic and characteristics of suicidal behavior

Characteristic	Jews		Arabs		Total	
	N	%	N	%	N	%
Location of attempt ^a						
Home	85	96.6	83	98.8	168	97.6
Other	3	3.4	1	1.2	4	2.4
Communication of intention ^b						
Others present	51	57.3	70	81.4	121	69.7
Others expected to appear	29	32.6	11	12.8	40	22.8
Unknown	9	10.1	5	5.8	14	8.5
Method of self-harm ^c						
Self-poisoning	82	92.1	80	93.0	162	92.6
Self-injury	7	7.9	6	7.0	13	7.4
Number of previous attempts ^d						
None	68	76.4	70	81.4	138	79.4
One	8	9.0	7	8.1	15	8.6
Two or more	13	14.6	9	10.5	22	12.8
Mean±SD	0.41±0.8		0.38±0.9*			

^a $\chi^2=0.93$, df=1, p=0.33^b $\chi^2=12.43$, df=2, p=0.006^c $\chi^2=0.50$, df=1, p=0.82^d $\chi^2=0.77$, df=2, p=0.68

* two-tailed t-test: t-value=0.24, p=0.81

Table 3. Logistic regression of self-harm risk factors associated with ethnicity

Independent variable		χ^2	DF	P
Initial model	Gender	.374	1	.541
	Age group	17.192	3	.0006
	Marital status	4.270	2	.118
	Contact with mental health services	.097	1	.754
	Diagnosis	4.453	3	.216
	Communication of intention	7.004	3	.071
	Gender X Age group interaction	3.442	3	.328
Adjusted R ² =0.25; *LR χ^2 =60.1; d.f.=16; p=.0000; Prediction success rate=0.776				
Reduced Model	Age group	28.415	3	.0000
	Gender	.428	1	.513
Adjusted R ² =0.16; LR χ^2 =39.006; d.f.=5; p=.0000; Prediction success rate=0.69				

*LR χ^2 =likelihood ratio chi-square

Other inter-ethnic comparisons. There were no significant inter-ethnic differences in the remaining variables studied. The only exception was communication of suicidal intention as measured by isolation: a significantly larger proportion of Arab subjects in the presence of other people (81% vs. 57%), while a substantially higher proportion of Jewish patients (33% vs. 13%) committed their attempts in relative isolation ($\chi^2=12.43$, $df=2$, $p=0.006$).

Age/gender/ethnicity self-harm patterns

There were significant inter-ethnic differences in the age/gender patterns of self-harm. Among Jewish male patients, attempts rise dramatically after the age of 40, while among their Arab counterparts the age distribution of self-harm is even throughout age groups. Among Jewish female patients, self-harm episodes rise gradually with age, while among the Arab women there is a peak at the age group of 20–29 years.

Finally, logistic regression analysis was employed to better understand the between-group (ethnic) differences in suicidal risk factors controlling for the effects of confounding variables in the model (Table 3). The initial model included 16 independent variables and the gender by age group interaction (Adjusted $R^2=0.25$; $\chi^2=60.1$; $d.f.=16$; $p=.0000$). In a reduced version of the initial model, including age group and gender, only age was significantly associated with the high likelihood to belong to the Arab or Jewish group, when adjusted for the effects of the other variables in the model (Adjusted $R^2=0.16$; $\chi^2=39.006$; $d.f.=4$; $p=.0000$). However, gender becomes a significant variable in this model when age group was replaced by the gender by age interaction. This model was able to appropriately classify 69% of the attempters as belonging either to the Arab or the Jewish group.

Discussion

This study provides selected epidemiological data on the hospital and population incidence rates and characteristics of patients who committed self-harm and who were treated at a general public hospital in the Western Galilee. The study has some methodological strengths, e.g., a reasonable sample size was recruited and cases were well ascertained. However,

it was not free from important limitations, e.g., data extracted from medical records and not from purposely designed research protocols suffer from variable completeness and quality. We did not collect addresses that would have enabled us to calculate more exact rates and check urban-rural distributions. Also, affected people could seek medical help in at least two other hospitals in the Northern District, and these cases could significantly enhance the rate of attempted suicide. Therefore, we calculated this rate not only per population but also per hospital admission (Arab and Jewish separately in both instances). In addition to the last limitation, it should be taken into consideration that most people who self-harm do not present to medical services following the incident (24) and, hence, the incidence rates reported in this study (like in many others) are markedly underestimated, and factors associated with suicidal attempts in this larger group have not been examined.

The main results were as follows. First, the overall incidence rate of deliberate self-harm was 16.7 per 100,000 population, for Arabs 24.4 and for Jews 11.0 in 1996. This seemingly higher incidence rate among Arabs held up after the recalculation based on the number of hospital admissions (37.6 per 10,000 admissions, for Arabs 44.2 and for Jews 30.3). Second, significant inter-ethnic differences were found with regard to gender, age, and number of self-harm episodes. The findings thus suggest that differential patterns of risk factors may operate in each ethnic group. Third, although we found substantial differences in both Jewish-Arab sociodemographic and clinical profiles, the groups shared common characteristics of deliberate self-harm, such as location, methods, and number of previous episodes.

The finding of our study concerning the higher rates of suicidal attempts among Arab Israelis than among Jewish Israelis is in clear contrast to the corresponding figures for completed suicide (4.7 and 14.7 per 100,000 population of 15 years and older for Arabs and Jews, respectively; the aggregated rates for 1996–2000 are available at: <http://www.health.gov.il>). This inter-ethnic crossover suggests that deliberate self-harm among Arabs to the greater extent than among Jews is a way to externalize emotional distress rather than to express a wish to die. An important clinical implication of this

finding could be refraining from use of psychotropic medication in treatment of the patients who present with self-harm in the situation of psychological crisis.

During the past two decades epidemiological surveys were conducted on the incidence of suicidal attempts in the general populations of various industrialized countries (10–14). These studies indicated that the lifetime incidence of attempted suicide substantially varies through countries: from 2.7% in Sweden (11) through 4.6% in the U.S.A. (13) to 6.1% in Mexico (25). By contrast, the incidence rates in our sample, counting in relation to the general population as well as yearly number of admissions, were relatively stable. The substantial discrepancies in the reported rates between Israel and elsewhere may be explained by considerable methodological differences depending on the study, source of data and population, but the differences may also be cultural in nature (26).

Clinical characteristics

We found that only a minority of our subjects was given a psychiatric diagnosis. We can only speculate about reasons: perhaps the intake clinician could not diagnose due to severe physical condition as a result of attempt or was unwilling to diagnose psychiatric disorder to avoid stigmatization of the patient or there was no overt psychopathology. Psychiatric risk factors for suicide are well documented; among them a diagnosis of affective disorder, schizophrenia, alcoholism, or personality disorder, particularly when the disorder is chronic or recurrent, take an important place (27). Although hospital management of deliberate self-harm has a role in the identification and treatment of depression and alcohol misuse (28), there are intrinsic difficulties to making diagnoses for suicidal attempters, particularly when information of previous episodes or family history of psychopathology is lacking. In addition, the complex emotions that accompany the aftermath of a suicidal attempt ranging from feelings of stigmatization, shame and embarrassment through rejection and abandonment to disappointment, hopelessness and helplessness, may disguise or obscure underlying psychopathological conditions (29).

Psychosocial stressors, independent of psychiatric diagnosis, must also be considered as proximal

determinants of suicidal behavior (30). Perhaps the suicidal attempt responded more to an impulse as a result of an interpersonal crisis than a psychiatric problem. This assumption finds confirmation in the fact that more than a half of both Arab and Jewish patients performed their attempts in the presence of others, thus stressing the communicating aspect of self-harm rather than a genuine intention to die as a result of their actions. This finding is in accord with conclusions from a few qualitative studies that used different methods and concurred that deliberate self-harm is an externalized way of representing diffuse intrinsic distress (28, 31, 32).

In this study, a substantially greater proportion of Jewish than Arab attempters met ICD-10 criteria for mood and anxiety disorders; both groups equally shared the remaining diagnostic categories including schizophrenia and personality disorders, and a substantially smaller proportion of Arab than Jewish patients had prior contact with mental health services. These findings receive indirect support from a recent Israel-based World Mental Health Survey (33) that found that though Arab-Israelis, in contrast to Jewish-Israelis, had higher 12-month prevalence rates for combined anxiety and mood disorders, they had lower self-appraisal of mental health and sought less help from specialized health services for the treatment of those disorders.

Gender-age-ethnicity patterns of self-harm

The higher proportion in our sample of women who had injured themselves is consistent with the common observation self-harm as a predominantly female behavior. Also, self-harm was particularly high in the mid-20 to 30 year age groups, which is only slightly older than that in other reports (1–3). However, when we considered gender/age relationships in the context of ethnicity (at both bivariate and multivariate levels), specific demographic patterns of self-harm emerged: the higher proportion of Jewish men and women injured themselves after age 40, and Arab women in the mid-20 year age group, while self-harm of Arab men had no age preference. One possible explanation is that deliberate self-harm in Arab women in early adulthood is an attempt at resolution of a psychosocial crisis. Arab women are in a disadvantaged social position and may lack the liberty of openly expressing disagreement, particu-

larly with regard to the male partner. This crisis may result from a conflict between traditional normative values regulating marriage in the Arab population and Western values declaring female independence and freedom. Possibly because women among Arabs are both a national minority and are exposed to the stresses of a patriarchal society (34), deliberate self-harm may be an attempt of Arab women to protest against oppressive families. The typical mid-life existential crisis could be responsible for the emergent age-pattern of self-harm among the Jewish subpopulation in this study, as it can be seen in other Western urban populations (35, 36).

In conclusion, the findings of our study suggest that differential patterns of risk factors operate in each ethnic group, and, hence, to better explore these factors further inter-ethnic in-depth investigation of deliberate self-harm is warranted.

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