South African Family Practice 2014 ; 56(5):1–8
http://dx.doi.org/10.1080/20786190.2014.980159

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ISSN 2078-6190 EISSN 2078-6204
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RESEARCH

Effectiveness of a Buddy intervention support programme for suicidal behaviour in a primary care setting

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Background: Suicidal behaviour is a major contributor to the health burden globally. Non-fatal suicidal behaviour may be 10–40 times more frequent than fatal suicidal behaviour. National responses to this crisis have been variable. This study was designed to evaluate and compare the effectiveness of a brief Buddy intervention support programme with the World Health Organization Multisite Intervention Study on Suicidal Behaviours (SUPRE-MISS) programme with regard to a cohort of suicide attempters.
Method: Six hundred and eighty-eight suicide attempters were recruited into this randomised control study following admission and stabilisation in two community-based hospitals. They were randomised into either the SUPRE-MISS intervention group (control) or the Buddy intervention support group (experimental), and followed-up over 18 months. Data were analysed using SPSS® 19.
Results: Three suicides occurred in the control group and one in the Buddy group. Collectively, 171 further suicide attempts were recorded during the 18 months, with 103 in the control group and 68 in the Buddy group. Differences between the two groups were statistically significant.
Conclusion: The Buddy intervention was found to be effective and relevant in reducing suicidal behaviour in the local community. These findings have practical implications for implementation at primary care level in all communities.

Keywords: Buddy support, prevention, suicidal behaviour

Introduction

Suicidal behaviour in all its forms (suicidal ideation, plans, attempts and completed suicide) has become a global health burden. It has been predicted that the number of suicides will increase dramatically over the next few years, and that by 2020, approximately 1.53 million suicides will occur globally per annum, compared to figure of approximately one million per year at present.[1,2] It is well known that more people engage in non-fatal suicidal behaviour, and even more people think about killing themselves. This type of behaviour could be up to 10–40 times more frequent than that for completed or fatal suicidal behaviour.[3] In South Africa, notwithstanding the fact that many attempted and completed suicides remain unreported, the official statistics are alarming, with a suicide prevalence rate of 17–25 per 100 000 population, and a suicide to attempted suicide ratio of 1:20. Suicide accounts for 9.5% of all unnatural deaths in young people and 11% in adults in the country. The average age of suicide is 35 years and 20–29 years for suicidal attempts.[4,5] Recent studies have provided reliable information that suicidal behaviour is becoming increasingly prevalent in South Africa in all socio-demographic groups.[6–16]

Hanging, shooting and self-poisoning have emerged as the main methods used to commit suicide in South Africa.[3,17-20] Self-poisoning constitutes the primary method used by patients with parasuicidal behaviour. This includes the ingestion of harmful substances, such as paraffin, battery acid or pesticides,[21] and the ingestion of analgesics, benzodiazepines and other prescribed medicines.[22,23] A disturbing finding made in several studies was that a large number of cases of self-poisoning involved common household medicines and agents that were easily available and accessible, such as paracetamol, anti-diabetic tablets (such as glibenclemide), benzodiazepines, methyl salicylate ointment (commonly referred to as "wintergreen"), paraffin, turpentine, insecticides and detergents.[3,24,25]

It is generally agreed that because suicidal behaviour is such a complex, multi-faceted phenomenon and a process with many interacting variables, intervention and management programmes cannot be implemented according to a generalised philosophy, but should rather be adapted and individualised to each patient.[3,26] Consensus has been reached on the core principles embraced in many currently available clinical guidelines.[3,26,27] A collaborative synergistic approach between primary care doctors and regional or secondary care has been recommended in all countries.[28] Additionally, the concept of "gatekeeper" training (involving teachers, peers and community workers), as well as utilisation in suicide prevention has gained acceptance in Australia, and has the potential for expansion to other programmes.[29] Early intervention has also been shown to be successful in promoting and maintaining a lower risk status from adolescence to young adulthood.[30–32]

Since depression is linked to suicidal behaviour, it has been recommended that any patient with risk factors for depression, such as chronic disease, abuse and interpersonal conflict, should be targeted for appropriate and timely treatment.[33] Many studies have also recommended intense psychosocial interventions in patients when family dynamics and interpersonal issues have been identified.[34–38] These include issues such as divorce, separation, partner abuse, child abuse, elderly persons living alone, substance abuse, a low household income, human immunodeficiency virus (HIV) diagnosis and disclosure issues.

The Multisite Intervention Study on Suicidal Behaviours (SUPRE-MISS) programme, a global initiative of the World Health

Organization (WHO) since 2000 in many developed and developing countries, has produced promising results, including an actual reduction in all forms of suicidal behaviour thus far.[39] In summary, this case-controlled research programme was conducted in Durban, South Africa; Campinas, Brazil; Colombo, Sri Lanka; Hanoi, Vietnam; Karaj, Iran and Tallinn, Estonia; and comprised 500 randomly selected participants from each country. Suicide attempters seen at emergency departments in these sites were assigned to one of two modalities; "treatment as usual" (according to prevailing norms) or "brief intervention for suicide prevention" (which included a one-hour counselling session by the caregiver just before discharge and telephonic or personal contacts with each participant by healthcare workers at nine specified time points following discharge viz. weeks 1, 2, 4, 7 and 11, and months 4, 6, 12 and 18. If the patient needed further support, this was facilitated immediately. Two of the 1 168 suicide attempters committed suicide in the brief intervention programme, while 20 of 1 117 participants in the "treatment as usual" arm committed suicide. This study underscores the benefits that could result from a simple intervention programme, and is the first longitudinal randomised controlled trial to evaluate a suicide prevention intervention with completed suicide as an outcome.

Several studies have demonstrated that the Buddy intervention support system is a simple and cost-effective addition to group treatment programmes.[40–42] The Ask, Care, Escort (ACE) suicide programme, developed for the USA army, incorporates the concept of a "buddy" in its implementation. In this programme, at-risk soldiers were identified by a colleague, who then volunteered to support the friend in need and facilitated urgent professional help when the need arose. This intervention has enjoyed enormous success in the USA, and recently won a best practice award in the suicide prevention category.[42] A number of studies have commented positively on the effectiveness of brief interventions in a number of clinical settings, such as alcoholism and suicide.[43–45]

The current study was designed to evaluate and compare the effect of a simple brief Buddy intervention support programme with the WHO SUPRE-MISS programme on suicidal behaviour in a group of suicide attempters in Durban, South Africa.

Method

This randomised control clinical intervention study was designed within an epidemiological framework and comprised analytical and descriptive elements. The framework therein used was adapted from the WHO SUPRE-MISS study.[27,46] The study was conducted at two state-funded community-based hospitals in the south of Durban, KwaZulu-Natal. Adult patients aged 18 years and older and treated in the emergency units or admitted to the short- or long-stay wards in either hospital following a suicide attempt during the study period September 2007- March 2010, formed the study population. Six hundred and eighty-eight such patients were recruited to form the study sample as soon as their medical condition had stabilised. The calculation of the sample size was based on statistical advice by the consulting biostatistician. Following informed consent, participants were randomised simply by the researcher into either the control group (equivalent to the WHO SUPRE-MISS intervention)[46] or the Buddy group, until 344 participants were recruited into each arm of the study. In order to minimise allocation bias, the process of randomisation involved computerised allocation of consecutive participants following informed consent into either arm, and blinding of the participants. Participants were informed 24 hours later of placement into either arm. Participants in the control and Buddy groups were subject to a one-hour session of individual counselling and information sharing as close to the time of discharge as possible, aimed at educating the participants on suicide, as well as improving their awareness of available resources should they need medical, psychological or social welfare support. Participants in the control group were followed-up by either the lead researcher or the trained qualified research assistant. This counselling was similar to that conducted in the experimental arm of the SUPRE-MISS study, and included individual psychotherapy, as well as the completion of information gaps. Those in the Buddy group were supported by participant-nominated persons called "buddies", who were empowered to provide basic counselling and facilitate specialised referral if required. "Buddies" were trained by the lead researcher in three workshops, each lasting four hours. Training included aspects such as suicide information sharing, feedback, management of challenges, coping skills, counselling strategies and information on how to facilitate referral for further care or support, if needed. Additional sessions (personalised or group) were conducted depending on needs and feedback from the "buddies".

Baseline demographic details and data relating to the suicide attempt were acquired via the WHO SUPRE-MISS validated questionnaire,[46] administered by the researcher. Participants were followed-up longitudinally at nine set time points, similar to those followed in the SUPRE-MISS study (weeks 1, 2, 4, 7 and 11 and months 4, 6, 12 and 18) by either the researcher (control group) or the "buddy" (Buddy group) over 18 months. During each contact, participants were asked standardised questions which were identical to those used in the WHO SUPRE-MISS studies.[46] These questions related to perceived personal well-being, further suicidal attempts and need for medical or specialist assistance. Random checks were conducted by the research team to confirm regular "buddy" support and also to authenticate the answers given by the "buddies" in the Buddy group to the research team.

Data were captured using the Statistical Software Package for the Social Sciences® version 19. Baseline and demographic variables were compared between the two groups using chi-square tests if the variables were categorical, and Mann-Whitney U tests when the variables were measured and not normally distributed. The effect of the intervention was assessed by firstly comparing whether or not there had been any further suicide attempts at each time point between the two groups. This was carried out using chi-square tests. A longitudinal analysis of the effect of the intervention involved calculating the incidence rates of suicide attempts per group together with 95% confidence intervals (CIs). This was calculated as number of attempts per 1 000 weeks of follow-up. A crude rate ratio was calculated and a *p*-value obtained using a chi-square test for a comparison of the rates. The effect of the intervention over time on whether any further suicide attempts could be predicted within the study period was tested using logistic regression modelling. Time and the treatment group were used as independent variables in the model. The effect of the intervention on the number of suicide attempts was modelled using a negative binomial model since the count data followed a Poisson distribution, but with significant over-dispersion because of many zero values. Binary logistic regression was used for the outcome of well-being, using a dichotomous variable of "feel good" or "feel bad". Gender was controlled in this model, as well as treatment group and time.

Ethical approval to conduct the study was granted by the University of KwaZulu-Natal (HSS/018/06D), and permission given by the managers of both the local hospitals. The study was also endorsed by a written communication from the WHO.

Results

The socio-demographic profile of the participants in both groups is presented in Table 1.

Table 1: Socio-demographic profile of the participants

Variables	Control group (*N* = 344)				Buddy group (*N* = 344)			
	Males (*n* = 94)		Females (*n* = 250)		Males (*n* = 78)		Females (*n* = 266)	
	n	%	*n*	%	*n*	%	*n*	%
Race								
Black	24	7.0	68	19.8	9	2.6	59	17.2
Coloured	9	2.6	27	7.9	16	4.6	54	15.7
Indian	52	15.1	137	39.8	49	14.2	138	40.1
White	9	2.6	18	5.2	4	1.2	14	4.1
Did not answer	0	0.0	0	0.0	0	0.0	1	0.3
Age (years)								
< 20	11	3.2	83	24.1	15	4.3	87	25.3
20–29	47	13.7	88	25.6	38	11.1	84	24.5
30–39	22	6.4	37	10.7	16	4.6	50	14.5
40–49	10	2.9	27	7.8	7	2.0	31	9.0
50–59	3	0.9	11	3.2	2	0.6	13	3.8
≥ 60	1	0.3	3	0.9	0	0.0	1	0.3
Did not answer	0	0.0	1	0.3	0	0.0	0	0.0
Marital status								
Single	61	17.7	163	47.4	52	15.1	174	50.6
Married	21	6.1	62	18.0	21	6.1	73	21.2
Widowed	4	1.2	4	1.2	0	0.0	4	1.2
Divorced or separated	8	2.3	21	6.1	5	1.4	15	4.4
Family type								
Extended	13	3.8	27	7.8	8	2.3	33	9.6
Nuclear	70	20.3	198	57.6	64	18.6	214	62.2
Living alone	7	2.0	9	2.6	4	1.2	7	2.0
Other	4	1.2	15	4.4	2	0.6	12	3.5
Did not answer	0	0.0	1	0.3	0	0.0	0	0.0
Occupation								
Student	9	2.6	74	21.5	18	5.2	83	24.1
Housewife	0	0.0	9	2.6	0	0.0	7	2.0
Unemployed	31	9.0	66	19.2	17	4.9	70	20.4
Labourer	15	4.4	28	8.1	16	4.7	20	5.8
Skilled worker	27	7.9	29	8.4	17	4.9	28	8.1
Office or business	7	2.0	34	9.9	6	1.8	44	12.8
Other	5	1.5	10	2.9	4	1.2	14	4.1
Education								
Nil	2	0.6	12	3.5	2	0.6	4	1.2
Primary	52	15.1	160	46.5	55	16.0	170	49.4
Secondary	19	5.5	45	13.1	11	3.2	58	16.8
University	3	0.9	6	1.7	2	0.6	4	1.2
Other	18	5.2	27	7.9	7	2.0	29	8.4
Did not answer	0	0.0	0	0.0	1	0.3	1	0.3
Income per annum								
< R30 000	69	20.1	236	68.6	58	16.9	235	68.3
R30 000–70 000	19	5.5	13	3.8	12	3.5	23	6.7
> R70 000	5	1.4	0	0.0	7	2.0	7	2.0
Did not answer	1	0.3	1	0.3	1	0.3	1	0.3
Religion								
Christian	57	16.6	183	53.2	45	13.1	185	53.8
Hindu	26	7.6	43	12.5	23	6.7	55	16.0
Islam	6	1.7	17	4.9	5	1.4	15	4.4
Other	5	1.5	6	1.7	5	1.4	10	2.9
Did not answer	0	0.0	1	0.3	0	0.0	1	0.3

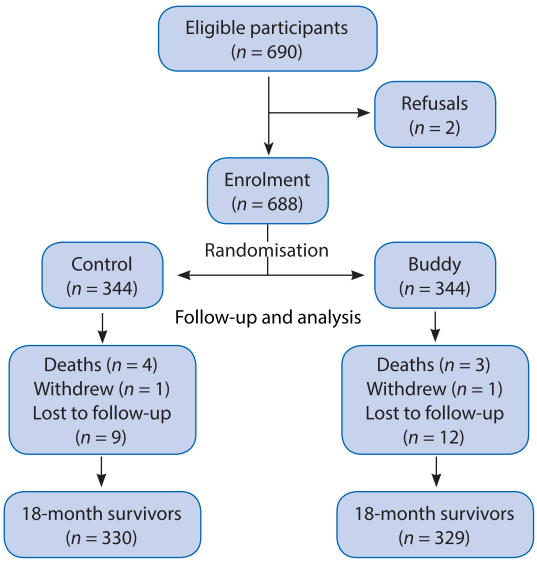

Figure 1: Flow chart of the participants in the randomised interventions

Indian participants in both groups constituted the majority (54.7%), followed by blacks (23.3%), coloureds (15.4%) and whites (6.5%). Gender analysis per race group reflected more females than males. The majority of suicide attempters were female, of a younger age i.e. < 40 years, unemployed, included students, those in the lower income category, with the highest education level being primary education, and belonging to the Christian religion. Chi-square tests did not demonstrate any statistically significant differences between the groups for all of the socio-demographic parameters measured (not shown in Table 1).

An analysis of participants lost to follow-up since the start of the intervention in each group included those who had voluntarily withdrawn from the study and those who could not be contacted by the researcher. These data are presented in Figure 1.

Ten participants in the control group and 13 in the Buddy group were lost to follow-up, including those who withdrew, as the study progressed. A total of 330 contactable survivors in the control group and 329 in the buddy group were recorded. Losses due to deaths from all causes were also analysed at each time point in the study. In total, there were seven deaths. All four deaths in the control group took place in week 1 following commencement of the intervention; three of them were due to suicide and one to natural causes. There were three deaths overall in the Buddy group; one due to suicide in week 11, one natural death (cancer) in the sixth month, and one death following a motor vehicle accident in month 18. The causes of all of the unnatural deaths in both the groups were confirmed by autopsy reports.

Further suicide attempts by the participants in both groups are presented in Table 2. The number of attempts was also recorded at each contact time point for the participants in each group, and the cumulative data collated and recorded for each group.

In total, 155 participants reported further suicidal attempts in the 18-month period following the intervention in both groups. Ninety-seven (3.2%) were recorded in the control group, compared to 58 (1.9%) in the Buddy group (Table 2). There was a statistically significant reduction in further attempted suicides in the Buddy group compared to those in the control group ($p = 0.049$ at week 1 and $p = 0.070$ at six months). The p-values obtained are not shown in Table 2. The incidence rate and 95% CI for the suicide attempters, defined as the number of attempters/persons per 1 000 units of person weeks, were calculated for each of the two groups (control and Buddy), and are presented in Table 3.

The calculated incidence rate was lower for the Buddy group (2.22) compared to that in the control group (3.73). This difference between the two groups was found to be statistically significant ($p = 0.001$).

The crude incidence rate ratio for attempted suicides between the two groups was also calculated and was found to be 0.595. The Buddy intervention was shown to be 40.5% protective against attempting suicide.

There were 171 further suicide attempts (103 in the control group and 68 in the Buddy group) by 155 attempters in both groups in the 18-month follow-up period following commencement of the

Table 2: Further suicidal attempts in the control and Buddy groups over 18 months

Groups		Further suicide attempts?		Total
		No	Yes	
Control	Count	2 899	97	2 996
	% within group	96.8	3.2	100.0
Buddy	Count	2 948	58	3 006
	% within group	98.1	1.9	100.0
Total	**Count**	**5 847**	**155**	**6 002**
	% within group	**97.4**	**2.6**	**100.0**

Table 3: Incidence rates for participants attempting suicide in the control and Buddy groups calculated at 18 months

Groups	Suicide attempters (number)	Time of follow-up (weeks)	Incidence rate	95% CI
Control	97	25 979	3.73	2.99–4.48
Buddy	58	26 068	2.22	1.65–2.80
Overall (total)	155	52 047	2.98	2.51–3.45
Rate difference*	–	–	1.51	0.57–2.45

CI: confidence interval
*: $p < 0.001$

intervention (Table 4). The incidence rates (95% CI) for the number of attempts by the participants in the two intervention groups were also calculated. This was defined as the number of attempts per 1 000 units of person weeks. These are shown in Table 4. There was a significant rate difference between the Buddy and the control groups ($p = 0.004$).

The crude incidence risk rate ratio for further suicidal attempts between the two groups was calculated and found to be 0.66 ($p = 0.027$), showing the Buddy intervention to be protective against further attempts by 34% (not shown in Table 4).

Using a logistical regression model technique to assess the extent of the protective effect of the Buddy intervention, the odds ratio for further attempts within the Buddy group, compared to the control group, was calculated to be 0.562 (95% CI: 0.373–0.848). This was found to be statistically significant ($p = 0.006$), and further demonstrated the protective effect of the Buddy intervention against further attempts. The "buddy" effect was then assessed for its predictive value in remaining protective as the programme progressed longitudinally over 18 months. This effect was not proven ($p = 0.486$ and $p = 0.323$) (Tables 5 and 6).

The methodology of binary logistic regression, using a generalised linear model with logit link, was employed to assess the effect of the two interventions on the mental and physical well-being of the participants. Time point, gender and group were independent variables (Tables 7 and 8).The dependent variable was "feel good" or "feel bad" where the outcome was dichotomised into 1–2 (bad) and 3–5 (good). The categorical variable information is shown in Table 7. Responses to the question: "How do you feel?" at each of the nine follow-up contacts were totalled and the collective responses are shown in Table 7. There were 6 004 responses for each of the variables studied viz. sex, group and responses to the question being asked on well-being.

As shown in Table 8, the Buddy intervention was not significantly protective for the assessed outcome viz. "feeling bad" ($p = 0.945$). The odds ratio for time was 0.748 (95% CI: 0.726–0.771). Participants were less likely to feel bad as time progressed. This was statistically significant ($p < 0.001$). Females were 1.65 times more likely than males to feel bad as time progressed ($p < 0.001$).

Discussion

This is probably the first study worldwide to have compared the impact of the WHO SUPRE-MISS brief intervention with that of the Buddy intervention programme for the prevention of suicide behaviour. An assessment of further suicidal behaviour, either in the form of completed suicides or further suicidal attempts by participants; and perceived mental or physical well-being, measured longitudinally at nine specified time points following commencement of the brief intervention; were the main outcomes measured in each of the two interventions in the

Table 4: Incidence rates for suicide attempts by participants in the control and Buddy groups (at 18 months follow-up)

Group	Suicide attempts (number)	Time of follow-up (weeks)	Incidence rate	95% CI
Control	103	25 979	3.96	3.20–4.73
Buddy	68	26 068	2.61	1.99–3.23
Overall (total)	171	52 047	3.29	2.79–3.78
Rate difference*	–	–	1.35	0.37–2.34

CI: confidence interval
*: $p = 0.004$

Table 5: Assessment of the effect of the Buddy intervention in predicting further attempts longitudinally over 18 months

Parameter	Hypothesis test			OR	95% Wald CI for OR	
	Wald X^2	df	*p*		Lower	Upper
Intercept	263.129	1	<0.001	0.029	0.019	0.045
Group 2 (Buddy)	7.536	1	0.006	0.562	0.373	0.848
Group 1 (Control)	–	–	–	1	–	–
Time (scale)	0.485	1	0.486	1.025	0.957	1.097

CI: confidence interval, OR: odds ratio, X^2: chi-square
Dependent variable: If "yes", any further suicide attempts?
Model: Intercept, group and time

Table 6: Assessment of the effect of the Buddy intervention on predicting further suicidal attempts over 18 months

Parameter	Hypothesis test			OR	95% Wald CI for OR	
	Wald X^2	df	*p*		Lower	Upper
Intercept	259.486	1	<0.001	0.028	0.018	0.043
Group 2 (Buddy)	4.920	1	0.027	0.630	0.419	0.948
Group 1 (Control)						
Time (scale) (negative binomial)	0.975	1	0.323	1.038	0.964	1.119

CI: confidence interval, OR: odds ratio, X^2: chi-square
Dependent variable: Specify number of attempts
Model: Intercept, group and time

Table 7: Effect of the two interventions (control and Buddy) on the well-being of the participants

Dependent variable	*n*	%
"Feel good"	4 281	71.30
"Feel bad"	1 723	28.70
Total	**6 004**	**100.00**
Group		
Buddy	3 002	50.00
Control	3 002	50.00
Total	**6 004**	**100.00**
Sex		
Female	4 511	75.10
Male	1 493	24.90
Total	**6 004**	**100.00**

current study. The Buddy intervention was shown to be more effective in reducing the number of further suicide attempts in the study cohort during the 18-month study period. This reduction was shown to be statistically significant, but this apparent protective effect using logistic regression modelling could not be predicted longitudinally over time during the 18-month study period. Several studies have commented on the effectiveness of Buddy interventions,[40–42] with one suggesting that the impact of Buddy support would be greater if participants were guided in choosing their "buddies".[41]

Indians comprised the majority of the study cohort in both the control and Buddy groups, followed by blacks, coloureds and whites. Based on the last census count carried out in 2001,[47] it was estimated that at least 3.3 million people were resident in Durban, and the local population was made up of blacks who constituted the majority (69%), followed by Indians (19.9%), whites (8.98%) and coloureds (2.82%). Sixty-eight per cent of the local population were in the working age group, and 38% were younger than 19 years of age. Females were slightly in the majority (51.94%). The average household income was reported to be R44 391 per annum, and annual per capita income was given as R8 726. The majority of people spoke *isiZulu,* while English was the first language for the remainder. Christianity was the predominant religion, followed by Islam and Hinduism. Therefore, caution must be exercised when interpreting the socio-demographic characteristics of the study cohort, considering that certain race groups were highly concentrated in the vicinity of both the community-based hospitals where the samples were recruited. Interestingly, the high numbers of blacks in this study (n = 127) mirrored the increased observed prevalence of this race group in a similar geographical context by other local studies.[22,25] Female attempters outnumbered male attempters in all race groups in the ratio 3:1. Similar findings relating to these and other socio-economic characteristics have emerged from other studies.[3,48–51]

The greater reduction in suicidal behaviour outcomes in the Buddy group, compared to the control group, may have been influenced by a number of factors, such as the opportunity of choosing their "buddies" being given to these groups, and the empowerment of all these "buddies" with the necessary counselling and care skills. Similar comments have been made in several other studies.[40–42]

South Africa has undergone a tremendous change since the abolition of apartheid and the advent of a new democracy in 1994. It is still undergoing socio-political and economic changes, and is considered to be in a state in transition.[3] Therefore, there are many challenges, such as unemployment, high crime rates, social insecurity, unmatched expectations with respect to academic and personal development, psycho-social sequelae following HIV diagnosis, acculturation and deculturation, and family and interpersonal difficulties.[3] These factors have the potential to precipitate and increase stress levels in vulnerable individuals with poor coping skills, and may therefore contribute to an escalation in suicidal behaviour. Our study showed that the protective effects of the Buddy intervention programme were limited to reducing further suicidal behaviour only within the study period of 18 months. Several studies have commented that brief interventions lasting less than 18 months are less effective than those conducted over a more protracted period.[40–46] Therefore, it is suggested that future programmes designed to alleviate the burden imposed by suicidal behaviour should be conducted on a wider and more sustained scale and be tested to confirm their effectiveness over a longer period.

Limitations of the study

The study population may have been grossly under-represented for many reasons. The study excluded suicide attempters who may have been treated by local general practitioners and private hospitals only. Other suicide attempters may not have accessed any healthcare facility because of the risk of stigmatisation. Also,

Table 8: Effect of the Buddy intervention on mental and physical well-being using a logistic regression model

Parameter	β	SE	95% Wald CI		Hypothesis test			OR	95% Wald CI for Buddy exposure	
			Lower	Upper	X^2	df	*p*		Lower	Upper
Intercept	0.12 4	0.1313	–134	0.381	0.899	1	0.346	1.132	0.875	1.464
Group 2 (Buddy)	–0.057	0.1096	–272	0.158	0.269	1	0.604	0.945	0.762	1.171
Group 1 (Control)	0*	–	–	–	–	–	–	1	–	–
Time	-	0.015	–321	–261	357.33	1	<0.001	0.748	0.726	0.771
	0.291	4			0					
PID-2.2 = 2	0.501	0.1293	0.247	0.754	14.979	1	<0.001	1.650	1.280	2.126
PID-2.2 = 1	0*	–	–	–	–	–	–	1	–	–
(scale)	1									

β: beta (log odds ratio), CI: confidence interval, OR: odds ratio, SE: standard error, X^2: chi-square
Dependent variable: Feel dichotomous
Model: Intercept, group, time and PID-2. PiD-2.2 = 2 (females); PID-2.2 = 1 (male)
*: Set to zero because this parameter is redundant

many children and youth (< 18 years) were omitted from this study because of informed consent issues. Several participants were lost to follow-up because of voluntary withdrawal from the study and non-traceability. The study was conducted in two suburbs of Durban where the resident population is dominated by certain racial groupings. These issues could have skewed our data. Hence, it may be difficult to generalise the effects of the interventions to other communities and other geographical areas within and beyond Durban.

Conclusion

The study has confirmed findings made by other studies that the Buddy intervention programme is effective in reducing the suicidal behaviour burden within study populations, and has the potential to yield greater benefits if implemented on a wider and more sustained scale at primary care level in all communities and countries with a high suicide behaviour burden.

References

1. World Health Organization. The World Health Report 2003: Shaping the future. Geneva: World Health Organization; 2003.
2. Bertolote JM, Fleischmann A. Suicidal behavior prevention: WHO perspectives on research. Am J Med Genet C Semin Med Genet. 2005;133C:8–12. Available from: http://dx.doi.org/10.1002/ajmg.c.30041 http://dx.doi.org/10.1002/(ISSN)1552-4876
3. Schlebusch L. Suicidal behaviour in South Africa. 1st ed. Pietermaritzburg: University of KwaZulu-Natal Press; 2005.
4. Burrows S, Laflamme L. Assessment of accuracy of suicide mortality surveillance data in South Africa: Investigation in an urban setting. Crisis. 2007;28:74–81.
5. Schlebusch L, Govender RD. Age, Gender and Suicidal Ideation Following Voluntary HIV Counselling and Testing. Int J Environ Res Public Health. 2012;9: 1–x.
6. Burrows S, Vaez M, Butchart A, Laflamme L. The share of suicide in injury deaths in the South African context: sociodemographic distribution. Public Health. 2003;117:3–10. S0033-3506(02)00019-7 [pii]. http://dx.doi.org/10.1016/S0033-3506(02)00019-7
7. Meel BL. A study on the incidence of suicide by hanging in the sub-region of Transkei, South Africa. J Clin Foren Med. 2003;153–7. http://dx.doi.org/10.1016/S1353-1131(03)00077-4
8. Burrows S, Laflamme L. Living circumstances of suicide mortality in a South African City: an ecological study of differences across race groups and sexes. Suicide Life Threat Behav. 2005;35:592–603. Available from: http://dx.doi.org/10.1521/suli.2005.35.5.592 http://dx.doi.org/10.1521/suli.2005.35.issue-5
9. Matzopoulos R, Norman R, Bradshaw D. The burden of injury in South Africa: fatal injury trends and international comparisons. Tygerberg: Medical Research Council-University of South Africa, Crime, Violence and Injury Lead Programme; 2004.
10. Flisher AJ, Liang H, Laubscher R, et al. Suicide trends in South Africa, 1968–90. Scand J Public Health 2004;32:411–8.http://dx.doi.org/10.1080/14034940410029469
11. Schlebusch L. Current perspectives on suicidal behaviour in South Africa. In: Suffla S, Van Niekerk A, Duncan D, editors. Crime, violence and injury prevention in South Africa: developments and challenges. Tygerberg: Medical Research Council - UNISA Crime, Violence and Injury Lead Programme; 2004. p. 9–21.
12. Cole B. Suicide in the youth. Daily News; 2005.
13. Schlebusch L. Suicidal Behaviour in Young People. In: van Niekerk A, Suffla S, Seedat M, Ratele K, editors. Crime, violence and Injury in South Africa: enabling child safety. Tygerberg: Medical Research Council-University of South Africa; 2012.
14. Naidoo T, Kirk GM. Post-mortem analysis of all deaths. In: Faculty Research Day. Durban: University of Natal; 2004.
15. Wassenaar DR, Pillay AL, Descoins S, et al. Patterns of suicide in Pietermaritzburg 1982–1996: race, gender and seasonality. In: Schlebusch L, Bosch BA, editors. 4TH Southern African Conference on Suicidology. Durban; 2000. p. 97–111.
16. Scribante L, Blumenthal R, Saayman G, Roos JL. A retrospective review of 1018 suicide cases from the capital city of South Africa for the period 1997–2000. Am J Forensic Med Pathol. 2004;25:52–5. 00000433-200403000-00011 [pii]. http://dx.doi.org/10.1097/01.paf.0000113862.03302.1d
17. Meel B. Epidemiology of suicide by hanging in Transkei, South Africa. Am J Forensic Med Pathol. 2006;27:75–8. Available from: http://dx.doi.org/10.1097/01.paf.0000202738.28446.4a
18. Donson H, Van Niekerk A. Suicide. Tygerberg: Medical Research Council-UNISA Crime, Violence and Injury Lead Programme; 2002.
19. World Health Organization. Report on a workshop on suicide. Prevention for countries in the African region In. Geneva: Department of Mental Health, WHO; 1999.
20. Flisher AJ, Parry CD. Suicide in South Africa. Acta Psychiatr Scand. 1994;90: 348–53. http://dx.doi.org/10.1111/acp.1994.90.issue-5
21. Mhlongo T, Peltzer K. Parasuicide among youth in a general hospital in South Africa. Curationis 1999;22: 72–6.
22. Naidoo P, Pillay BJ. Parasuicide in a general hospital in South Africa. Psychol Rep. 1993;979–82. http://dx.doi.org/10.2466/pr0.1993.72.3.979
23. Schlebusch L. Self-destructive behaviour in adolescents. S Afr Med J. 1985;68:792–5.
24. Schlebusch L. An overview of suicidal behaviour in South Africa at the dawn of the new millenium. In: Schlebusch L, Bosch BA, editors. Suicidal behaviour 4 Proceedings of the fourth Southern African Conference on Suicidology, Durban; 2000.
25. Schlebusch L, Vawda NB, Bosch BA. Suicidal behavior in black South Africans. Crisis. 2003;24:24–8.
26. Hawton K, Van Heeringen K. The International Handbook of Suicide and Attempted Suicide. Chichester: Wiley; 2000.
27. Bertolote JM, Fleischmann A, De Leo D, et al. Suicide attempts, plans, and ideation in culturally diverse sites: the WHO SUPRE-MISS community survey. Psychol Med. 2005;35: 1457–65. Available from: http://dx.doi.org/10.1017/S0033291705005404 S0033291705005404 [pii].
28. Pearson A, Saini P, Da Cruz D, et al. Primary care contact prior to suicide in individuals with mental illness. Br J Gen Pract. 2009;59:825–32. Available from: http://dx.doi.org/10.3399/bjgp09X472881. 2765834.
29. Isaac M, Elias B, Katz LY, et al. Gatekeeper training as a preventative intervention for suicide: a systematic review. Can J Psychiatry. 2009;54:260–8.
30. Hooven C, Herting JR, Snedker KA. Long-term outcomes for the promoting CARE suicide prevention program. Am J Health Behav. 2010;34:721–36. doi:10.5555/ajhb.2010.34.6.721 [pii]. 3119363.
31. Farzaneh E, Mehrpour O, Alfred S, et al. Self-poisoning suicide attempts among students in Tehran, Iran. Psychiatr Danub. 2010;22: 34–8.
32. Greydanus DE, Bacopoulou F, Tsalamanios E. Suicide in adolescents: a worldwide preventable tragedy. Keio J Med. 2009;58:95–102. http://dx.doi.org/10.2302/kjm.58.95
33. Henkel V, Mergl R, Kohnen R. Identifying depression in primary care: a comparison of different methods in a prospective cohort study. BMJ. 2003;326:200–1. http://dx.doi.org/10.1136/bmj.326.7382.200
34. An H, Ahn JH, Bhang SY. The association of psychosocial and familial factors with adolescent suicidal ideation: A population-based study. Psychiatry Res. 2010;177:318–322. S0165-1781(10)00102-2 [pii]. Available from: http://dx.doi.org/10.1016/j.psychres.2010.03.007
35. Kölves K, Ide N, De Leo D. Suicidal ideation and behaviour in the aftermath of marital separation: gender differences. J Affect Disord. 2010;120: 48–53. S0165-0327(09)00172-4 [pii]. Available from: http://dx.doi.org/10.1016/j.jad.2009.04.019
36. Krysinska K, Lester D. Post-traumatic stress disorder and suicide risk: a systematic review. Arch Suicide Res 2010;14: 1–23. 918914577 [pii]. Available from: http://dx.doi.org/10.1080/13811110903478997
37. McMillan KA, Enns MW, Asmundson GJ, Sareen J. The association between income and distress, mental disorders, and suicidal ideation and attempts: findings from the collaborative psychiatric epidemiology surveys. J Clin Psychiatry. 2010;71: 1168–75. Available from: http://dx.doi.org/10.4088/JCP.08m04986gry
38. Purselle DC, Heninger M, Hanzlick R, Garlow SJ. Differential association of socioeconomic status in ethnic and age-defined suicides. Psychiatry Res. 2009;167: 258–265. S0165-1781(08)00040-1 [pii]. 2736599. Available from: http://dx.doi.org/10.1016/j.psychres.2008.02.003
39. Bertolote JM. Suicide prevention SUPRE - the response from WHO. In: Schlebusch L, editor. XXIII World Congress- IASP International Association for Suicide Prevention. Durban; 2005.
40. May S, West R, Hajek P, McEwen AM. Randomized controlled trial of a social support ('buddy') intervention for smoking cessation. Pat Educ Counsel. 2006;64: 235–41. http://dx.doi.org/10.1016/j.pec.2006.02.008

41. Kviz FW. Use and effectiveness of buddy support in a self-help smoking cessation program. AM J Health Promot. 1994;8:191–201. http://dx.doi.org/10.4278/0890-1171-8.3.191
42. Gervasoni J. Suicide Prevention Program named best practice: ACE Suicide Intervention: Suicide Prevention Resource Centre and American Foundation Best Practice Registry for best practice; 2010.
43. Fleischmann A, Bertolote JM, Wasserman D, et al. Effectiveness of brief intervention and contact for suicide attempters: a randomized control trial in five countries. World Health Organization; 2007.
44. Hodgson R, Abbasi T, Clarkson J. Effective mental health promotion: a literature review. Health Educ J. 1996;55:55–74. http://dx.doi.org/10.1177/001789699605500106
45. Randell BP, Eggert LL, Pike KC. Immediate post intervention effects of two brief youth suicide prevention interventions. Suicide Life Threat Behav. 2001;31:41–61. http://dx.doi.org/10.1521/suli.2001.31.issue-1
46. World Health Organization. WHO. Multi-site Intervention Study on Suicidal Behaviours-SUPRE-MISS. Geneva: WHO; 2005.
47. Statistics South Africa. South African population statistics In. Pretoria: Government Gazette; 2001.
48. Stewart S. Suicidality, interpersonal trauma & cultural diversity: a review of the literature. In: Educational centre against violence, Australia; 2004.
49. Bosch BA, McGill VR, Noor Mahomed SB. Current trends in suicidal behaviour at a general hospital. In: Schlebusch L, editor. Suicidal behaviour. 3 Proceedings of the Third Southern African Conference on Suicidology. Durban; 1995. p. 71–94.
50. Flisher AJ, Ziervogel CF, Chalton DO, Leger PH, Robertson BA. Risk-taking behaviour of Cape Peninsula high-school students. Part II. Suicidal behaviour. S Afr Med J. 1993;83:474–6.
51. Masocco M, Pompili M, Vanacore N, et al. Completed suicide and marital status according to the italian region of origin. Psychiatr Q. 2010;81: 57–71. Available from: http://dx.doi.org/10.1007/s11126-009-9118-2

Received: 09-05-2013 Accepted: 03-10-2013