Title. Efficacy of a communication and stress management training on residents' self-efficacy, stress to communicate, and burnout: A randomised controlled study

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Abstract (96 words)

This is a longitudinal randomized controlled study investigating the efficacy of a communication and stress management skills training program on medical residents' self-efficacy to communicate and to manage stress in interviews, stress to communicate in interviews, and burnout. Ninety-six medical residents participated. Results showed a statistically significant increase in self-efficacy and decrease in stress to communicate. No changes were noted in burnout. Results of this training may encourage its compulsory organisation in the medical curriculum. Further research is required to examine whether a program associating person-directed and organisation-directed interventions could have an impact on residents' burnout.

Introduction

Medical residents have to handle organisational work-related difficulties such as intense work demands, limited autonomy, perception of work as stressful, and work-home interference (Biaggi, Peter, & Ulich, 2003; Geurts, Rutte, & Peeters, 1999; Hillhouse, Adler, & Walters, 2000; Prins, Gazendam-Donofrio, Tubben, van der Heijden, van de Wiel, & Hoekstra-Weebers, 2007; Sargent, Sotile, Sotile, Rubash, & Barrack, 2004; Thomas, 2004). These organisational work-related difficulties have been shown to be associated with the development of residents' burnout.

Furthermore, medical residents have to handle personal work-related difficulties such as communicating in highly emotional contexts. Although residents have to communicate in highly emotional contexts, they often report being not sufficiently trained in communication skills during medical school (Dosanjh, Barnes, & Bhandari, 2001). Residents also report experiencing stress to communicate with patients, particularly when dealing with their reactions to bad news and especially in oncology (Dosanjh et al., 2001). They report that this stress prevents them from feeling effective in their roles (Dosanjh et al., 2001). It may be hypothesised that this stress and this lack of self-efficacy to communicate with patients may add to the before mentioned organisational work-related difficulties and contribute to residents' burnout development. In fact, associations between lack of self-efficacy to

communicate and burnout have already been observed among physicians (Travado, Grassi, Gil, Ventura, & Martins, 2005).

Interventions may therefore be necessary to enhance self-efficacy, to reduce stress to communicate and in fine to reduce burnout levels. Some organisation-directed interventions have already been associated with lower burnout: work-hour restrictions (Gopal, Glasheen, Miyoshi, & Prochazka, 2005; Hutter, Kellogg, Ferguson, Abbott, & Warshaw, 2006) and increasing social support within the team (Le Blanc, Hox, Schaufeli, Taris, & Peeters, 2007). However, results of these interventions concerned essentially the emotional exhaustion dimension.

Among person-directed interventions, communication skills training programs have already shown their efficacy in improving physicians' self-efficacy to communicate (Ammentorp, Sabroe, Kofoed, & Mainz, 2007). However, the impact of such programs on physicians' burnout is inconsistent. For example, the Bragard study found no change in physicians' burnout post-training (Bragard, Libert, Etienne, Merckaert, Delvaux, Marchal, Boniver, Klastersky, Reynaert, Scalliet, Slachmuylder, & Razavi, 2009) and the Fujimori study found an increase in physicians' emotional exhaustion post-training (Fujimori, Oba, Koike, Okamura, Akizuki, Kamiya, Akechi, Sakano, & Uchitomi, 2003). To our knowledge, no such study exists among medical residents. Moreover, stress management skills training programs have also shown

limited impact on stress and burnout in health professionals in general (Marine, Ruotsalainen, Serra, & Verbeek, 2006). Among residents, two quasi-experimental studies have shown a positive impact of a stress management skills training program, but only on emotional exhaustion (McCue & Sachs, 1991; Ospina-Kammerer & Figley, 2003). No study has brought together a communication skills training and a stress management skills training.

At this stage, it is not possible to say what kind of intervention could have a positive impact. Therefore, a person-directed intervention bringing together a communication skills training and a stress management skills training has been developed to help medical residents deal with their own discomfort (Bragard, Razavi, Marchal, Merckaert, Delvaux, Libert, Reynaert, Boniver, Klastersky, Scalliet, & Etienne, 2006). This is the first study assessing in a randomised design the efficacy of this type of intervention. It was hypothesized that this intervention would lead to an increase in self-efficacy to communicate and to manage stress in interviews, a decrease in stress to communicate, and a decrease in burnout among medical residents.

Methods

Participants

To be included in this study, medical residents had to speak French, to show an interest for a psychological training and to be willing to participate in the training program and its assessment procedure. It is important to point out that medical residents work in the oncology field. In fact, the training program was focused on communication skills in cancer care. All institutions devoted to cancer care were asked to deliver an internal letter of invitation (n=2160). Because of the low response rate (n=41), attending physicians and heads of medical specialties (n=117) were contacted by phone to obtain names of medical residents. A total of 544 medical residents were actively contacted by phone and 351 residents were met. Following this process, 113 medical residents registered for the study. Barriers to participation were personal and institutional reasons, time limitations, training duration and time consuming assessment procedures.

From the 113 registered medical residents, 11 were excluded from the analyses because they did not complete assessment procedure after training. Moreover, 6 medical residents who attended less than one hour of the communication skills training and less than one hour of the stress management skills training were excluded from the analyses. Ninety-six medical residents were thus included in

statistical analyses. Socioprofessional data collected from the participants are shown in Table 1.

Insert Table 1

Design and assessment procedure

Training efficacy was assessed in a study allocating medical residents randomly after the first assessment time to a 40-hour training (intervention group) or to a waiting list (control group), according to a computer generated randomization list (See Figure 1). Assessments were scheduled before training (T1) and in the two months following the end of the training for the intervention group (T2) and eight months after the first assessment time for the control group (T2). Medical residents in the waiting-list group were invited to take part in the training program after the end of the second assessment time. At each assessment time, the procedure included two simulated interviews and the same questionnaires. Only results concerning questionnaires will be reported here. The study has been approved by the local ethics committee.

Insert Figure 1

Training program

The training program included a 30-hour communication skills training and a 10-hour stress management skills training in small groups (up to 7 participants). The teaching method is learner-centred, skill-focused, practice-oriented and intensive (with feedback delivered during the role-play) (Merckaert, Libert, & Razavi, 2005). The communication skills training offered some theoretical information presenting adequate communication skills in two-person and three-person interviews. In the other sessions, medical residents were invited to practise the principles discussed in the theoretical sessions through role-plays with immediate feedback offered by experienced facilitators. The stress management skills training focused on four topics: detection of job stressors and stress outcomes, relaxation techniques, cognitive restructuring and time management. A last session promoted integration and use of learned skills. This program has been described in details elsewhere (Bragard et al., 2006).

Assessments

Assessments were scheduled at baseline and in follow-up.

Medical residents socioprofessional data were collected (age, gender, marital status, medical specialty, year of training, number of years of practice in medicine,

and whether or not they had had some previous communication training and stress management training in the last year).

Medical residents' self-efficacy beliefs to communicate and to manage stress and stress to communicate were assessed with questionnaires specifically developed for this study

Self-efficacy beliefs to communicate and to manage stress (26 items) in interviews were assessed with a questionnaire adapted from Parle, Maguire, & Heaven (Parle, Maguire, & Heaven, 1997). This questionnaire assessed medical residents' perception of their ability to communicate (For ex. "To assess cancer patient's level of anxiety") and to manage stress (For ex. "To feel calm and relaxed"). It is a 5-point Likert scale ranging from "not at all able" (1) to "extremely able" (5). Cronbach's alpha coefficients were 0.85 for communication and 0.79 for stress management. Test-retest correlations were 0.51 ($p<.001$) for communication and 0.58 ($p<.001$) for stress management.

Medical residents rated their stress to communicate in interviews with a cancer patient on three 10-cm visual analogue scales (VAS) (For ex. "To communicate with a cancer patient is for me... »). Ratings range from "not at all stressful" (0) to "extremely stressful" (10). Cronbach's alpha coefficient was 0.76. Test-retest correlation was .49 ($p<.001$).

Medical residents' burnout was assessed with the Maslach Burnout Inventory (MBI) (Maslach, Jackson, & Leiter, 1986) which is a 7-point Likert scale ranging from never (0) to daily (6). The instrument assessed the three dimensions of the burnout syndrome: emotional exhaustion, depersonalisation, and personal accomplishment.

Statistical Analyses

Statistical analyses of the data consisted of a comparative analysis of both groups of medical residents at baseline using t tests and χ^2 tests as appropriate. Time and group-by-time changes in the medical residents' self-efficacy, stress to communicate, and burnout were analysed using repeated-measures analysis of variance (MANOVA). The effect size of the training program's efficacy was also calculated. The socioprofessional data were controlled for the analysis of the training program's efficacy. All tests were two-tailed and the alpha was set at 0.05.

Results

Medical residents' socio-professional data

Socio-professional data are shown in Table 1. Statistically significant differences were found at baseline between the intervention and control group concerning specialty and previous communication skills training. In the intervention group, medical residents took part on average to 25 hours of training (SD= 8.1).

Efficacy of the Training

Significant MANOVA time changes were noted in medical residents' emotional exhaustion.MANOVA group-by-time changes were statistically significant concerning self-efficacy and stress to communicate: self-efficacy increased more in the intervention group than in the control group, and stress to communicate decreased more in intervention group than in control group (Table 2 and Figure 2). However, no statistically significant group-by-time changes were noted in emotional exhaustion, depersonalisation, and personal accomplishment. Effect sizes are shown in Table 2. The socioprofessional data have no impact on the training program's efficacy.

*Insert Table 2 and **Figure 2***

Discussion

This is the first study assessing in a randomized design the impact of a communication skills training combined with a stress management training on medical residents' self-efficacy in interviews, stress to communicate and burnout. Results partly confirm the hypotheses.

As regards self-efficacy, it was hypothesized that the intervention would lead to an increase in medical residents' self-efficacy in interviews. Results of this study confirm this hypothesis and are similar to results of the Ammentorp study among senior physicians (Ammentorp et al., 2007). The increase in self-efficacy is an important finding since changes in self-efficacy may be a first step towards changes in performance (Bandura, 1977). It may be hypothesized that this increase in self-efficacy could predict improvements in medical residents' communication and stress management in actual patient interviews.

As regards stress to communicate, it was hypothesized that the intervention would lead to a decrease in medical residents' stress to communicate in interviews. Results of this study confirm this hypothesis. Medical residents' communication skills improvements combined with techniques acquired in the stress management skills training have contributed to reduce their stress to communicate. It is the first study to show this result empirically.

As regards burnout, it was hypothesized that the intervention would lead to a decrease in medical residents' burnout. Results of this study do not confirm this hypothesis. The question of how to reduce burnout remains unclear. The expected positive impact on the level of burnout might only be observed after several months of applying the new skills in one's clinical practice. It is true that burnout affects a person's general functioning. A change in this regard no doubt requires a certain amount of maturation time. Moreover, organisation-directed interventions may be needed to consider the organisational work-related variables encountered by medical residents in their daily practice (Biaggi et al., 2003; Geurts et al., 1999; Hillhouse et al., 2000; Prins et al., 2007; Sargent et al., 2004; Thomas, 2004). Organisation-directed interventions such as improving supervision, increasing participation in decision-making, and organising staff support groups may be useful in this context (Gopal et al., 2005; Hutter et al., 2006; Le Blanc et al., 2007).

This study has some limitations. The first limitation is the small number of participants. The recruitment was difficult. Reasons for the low participation to the study seemed to be more related to time limitations, workload, and time-consuming assessment procedures than to lack of interest. Although little is known about effective recruitment strategies, a way to facilitate recruitment could be building smaller group sessions (2 to 3 participants) at the workplace. Second, the fact that medical residents were voluntarily enrolled could limit the generalizability of our results. It could be

argued that the motivation of those residents was high and that this could have an impact on the changes observed. Moreover, an assessment point at 6 months post training may have allowed to assess the impact of the transfer of the new skills in clinical practice in the long run.

To conclude, findings of this study suggest that training in communication and stress management skills can be used to improve medical residents' stress and self-efficacy in interviews. This may encourage its compulsory organisation in the medical curriculum. However, in order to generalize our results, this study should be repeated in other and larger study samples. Further research is also required to examine whether a program associating person-directed and organisation-directed interventions could have an impact on medical residents' burnout.

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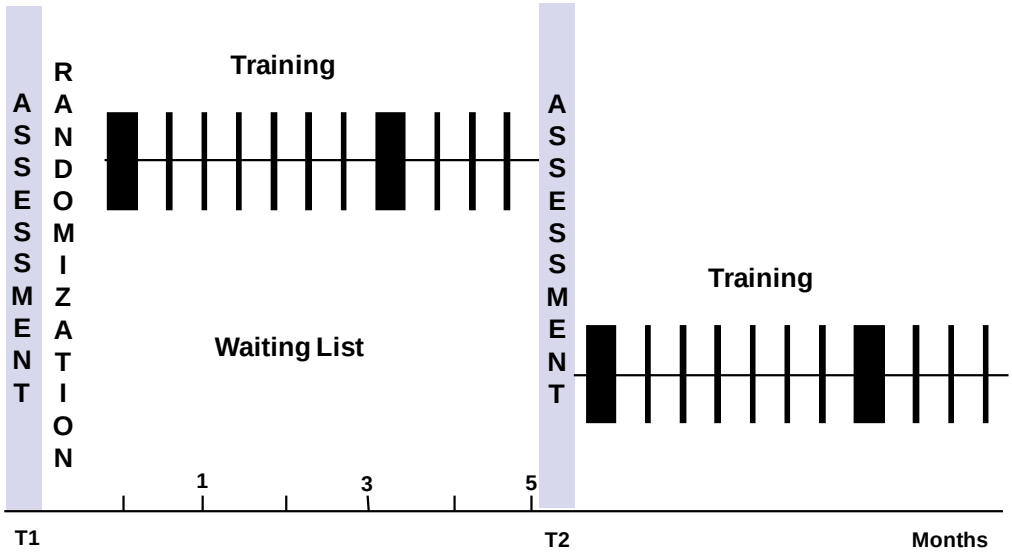

Figure 1. Study's design

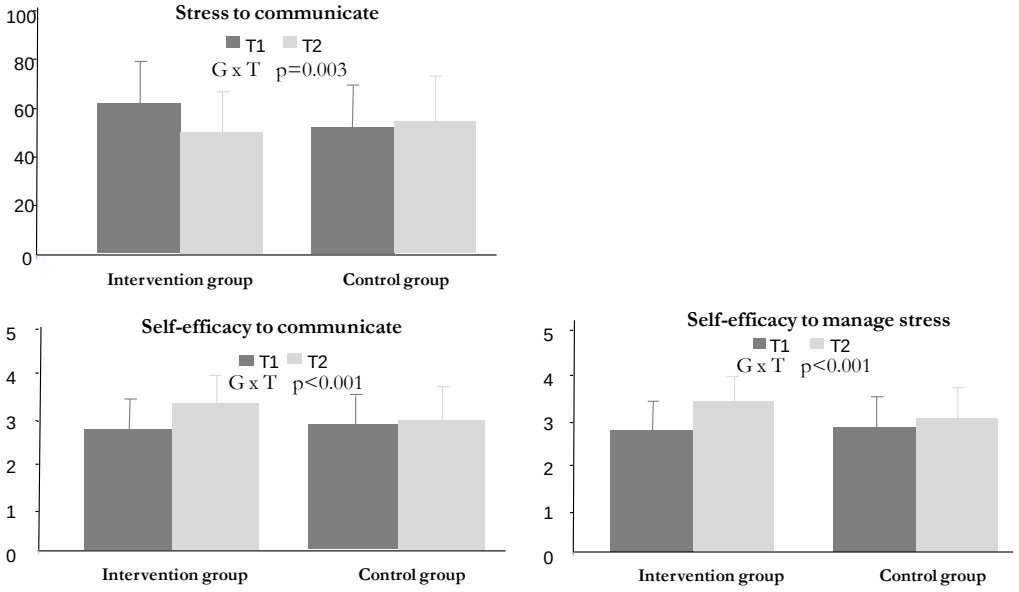

Figure 2. Group by time changes in medical residents' stress to communicate, self-efficacy to communicate and to manage stress

Table 1. Medical resident's socioprofessional data at baseline (n = 96)

	Intervention Group (n = 49)		Control Group (n = 47)		Comparisons	
	n	%	n	%	t/chi²	p
Age					.37	.710
Mean	28.3		28.1			
SD	3.0		2.2			
Gender					.63	.526
Male	16	32.7	19	40.4		
Female	33	67.3	28	59.6		
Marital status					6.03	.051
Single	19	38.8	12	25.5		
Married or living with partner	17	34.7	28	59.6		
Family	13	26.5	7	19.9		
Specialty					7.00	.030
Oncology, hematology and radiotherapy	3	6.1	12	25.5		
Gynaecology	15	30.6	10	21.3		
Internal medicine and other	31	63.3	25	53.2		
Year of training					6.35	.274
1	9	18.4	7	14.9		
2	12	24.5	5	10.6		
3	16	32.7	19	40.4		
4	5	10.2	10	21.3		
5	7	14.3	5	10.6		
6	0	0	1	2.1		
Medical practice (in years)					-0.10	.920
Mean	3.0		3.0			
SD	2.5		1.6			
Previous communication skills training	5	10.2	0	0	5.06	.024
Previous stress management skills training	2	4.1	1	2.1	0.30	.582

Abbreviation: SD, standard deviation; t, independent-samples T-test; p, p values of statistical significance.

Table 2. Efficacy of the training program on medical residents' stress to communicate, self-efficacy and burnout (n=96)

	Mean (SD)								Manova						
	Intervention Group (n = 49)				Control Group (n = 47)				Group		Time		Group x Time		Effect size
	T1		T2		T1		T2		$F_{1,94}$	p	$F_{1,94}$	p	$F_{1,94}$	p	d*
Stress to communicate	61.7	(15.8)	53.0	(16.2)	53.6	(18.0)	55.1	(15.4)	1.00	.320	4.63	.034	9.32	.003	0.60
Self-efficacy to communicate	3.1	(0.4)	3.4	(0.5)	3.2	(0.5)	3.2	(0.6)	2.47	.120	27.90	.000	22.90	.000	0.88
Self-efficacy to manage stress	2.8	(0.5)	3.4	(0.5)	2.9	(0.6)	3.1	(0.7)	0.68	.410	61.20	.000	18.29	.000	0.81
Burnout															
Emotional exhaustion	25.2	(9.2)	23.6	(9.4)	26.7	(8.4)	24.2	(9.6)	0.34	.559	7.90	.006	0.33	.570	0.12
Depersonalization	9.2	(5.3)	9.7	(4.9)	9.1	(5.1)	9.2	(5.1)	0.14	.708	0.18	.672	0.44	.510	0.02
Personal accomplishment	37.2	(5.6)	38.2	(5.1)	35.8	(5.5)	36.7	(5.8)	2.12	.148	3.47	.066	0.01	.910	0.14

Abbreviation: SD, Standard deviation; Manova, repeated measures of variance ; F, Snedecor's F; p, p values of statistical significance

*Cohen's d is defined as the absolute value of the difference between the mean of one group and the mean of the other group divided by the standard deviation based on both groups. Conventionally, an effect size of 0.2 is regarded as being small, 0.5 as medium and 0.8 as large (Sheskin, 2004).