



Invited Review

Physicians' psychophysiological stress reaction in medical communication of bad news: A critical literature review



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ABSTRACT

Introduction: Stress is a common phenomenon in medical professions. Breaking bad news (BBN) is reported to be a particularly distressing activity for physicians. Traditionally, the stress experienced by physicians when BBN was assessed exclusively using self-reporting. Only recently, the field of difficult physician–patient communication has used physiological assessments to better understand physicians' stress reactions.

Method: This paper's goals are to (a) review current knowledge about the physicians' psychophysiological stress reactions in BBN situations, (b) discuss methodological aspects of these studies and (c) suggest directions for future research.

Results: The seven studies identified all used scenarios with simulated patients but were heterogeneous with regard to other methodological aspects, such as the psychophysiological parameters, time points and durations assessed, comparative settings, and operationalisation of the communication scenarios. Despite this heterogeneity, all the papers reported increases in psychological and/or physiological activation when breaking bad news in comparison to control conditions, such as history taking or breaking good news.

Conclusion: Taken together, the studies reviewed support the hypothesis that BBN is a psychophysiologicaly arousing and stressful task for medical professionals. However, much remains to be done. We suggest several future directions to advance the field. These include (a) expanding and refining the conceptual framework, (b) extending assessments to include more diverse physiological parameters, (c) exploring the modulatory effects of physicians' personal characteristics (e.g. level of experience), (d) comparing simulated and real-life physician–patient encounters and (e) combining physiological assessment with a discourse analysis of physician–patient communication.

1. Introduction

Stress is a widespread phenomenon among healthcare providers. In addition to such common workplace stressors as high workloads, time constraints, the technical complexity of tasks and professionals' conflicting roles, healthcare workers are exposed to the more specific stressors of repeated exposure to illness, suffering, death, the emotional distress of patients, the need to manage their own and patients' negative emotions, and the challenging interactions with patients and their families (Grunfeld et al., 2000; Ruotsalainen et al., 2008; Sehlen et al., 2009). Interpersonal contact and communication is a core element of a physician's activity. Adequate communication has been defined as a key competency for physicians who wish to become medical experts (Frank,

2005). Yet there is evidence that some medical encounters increase physicians' levels of stress. This seems to be especially the case with relatively inexperienced physicians or physicians confronted with challenging communication situations, such as disclosing bad news (e.g. positive cancer or HIV diagnosis, lifelong disablement, event of death) to a patient or a patient's family (Baile et al., 2000; Buckman, 1984; Doyle and O'Connell, 1996).

The disclosure of bad news is generally called breaking bad news (BBN). Buckman (1992) broadly defines bad news as “any information which adversely and seriously affects an individual's view of his or her future”. Delivering sad, bad and distressing news is a recurrent task, one which healthcare personnel, particularly physicians, have to deal with frequently. Every physician who has direct contact with patients has to

Abbreviations: BBN, breaking bad news; BGN, breaking good news; CO, cardiac output; cs, consultation; DBP, diastolic blood pressure; ECG, electrocardiography; HT, history taking; HR, heart rate; HRV, heart rate variability; MAP, mean arterial pressure; NK, natural killer; POMS, Profile of Mood States; SBP, systolic blood pressure; SC, skin conductance; SP, simulated patient; STAI-S, State-Trait Anxiety Inventory (state scale); SVR, systemic vascular resistance; VAS, visual analogue scale

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break bad news, but this is especially true in medical specialties dealing with life-threatening diseases (e.g. oncology, gynaecology, obstetrics, trauma surgery). Some physicians have to deliver bad news on a daily basis (Baile et al., 2000).

The scientific literature repeatedly describes BBN as an emotionally burdensome and distressing task—perhaps the most distressing task in a physician's professional activity (e.g. Girgis and Sanson-Fisher, 1995; Vandekieft, 2001; Doyle and O'Connell, 1996; Hulsman et al., 2010). For many years, researchers assessing physicians' stress reactions in BBN situations mainly relied on self-reporting and, indeed, their studies revealed increased self-reported stress and/or anxiety among physicians in these difficult medical encounters. Orlander et al. (2002) described the powerfulness of residents' first clearly-remembered BBN experiences, as revealed by their accounts of the event and their uncomfortable feelings. The intense experiences related to BBN can haunt a physician for decades (Fallowfield, 1993). Even with greater experience, physicians still feel various intensities of stress before and/or during BBN to patients (Ptacek et al., 1999; Ptacek et al., 2001). Ptacek et al. (1999) asked a convenience sample of 38 physicians to recall a BBN consultation and rate, on five-point Likert scales, the level of stress they experienced (from 1 = “none” to 5 = “a great deal”) and how long that stress reaction lasted (from 1 = “until the transaction ended” to 5 = “> 3 days”). Although, on average, the intensity of stress was moderate just prior to and during the delivery of bad news (2.8 ± 1.1 and 3.0 ± 0.9 , respectively), the stress experienced lasted longer than the medical encounter itself for 86% of physicians and for more than one day for 20% of them. In another study by Ptacek et al. (2001), 42% of 73 physicians reported that the stress they experienced lasted from several hours up to three days or more. In an informal survey, Baile et al. (2000) found that two thirds of 500 oncologists felt “not very comfortable” or “uncomfortable” dealing with patients' negative emotions. According to Dosanjh et al. (2001), patients' or their families' emotional reactions to bad news seemed to be a source of distress for residents.

Although the assessment of physicians' subjective experiences gives important information on how they feel when breaking bad news, their stress reactions are not limited to this affective dimension: they also manifest themselves on the physiological level. Physiological assessment has some advantages over subjective assessment. When individuals must retrospectively give overall evaluations of their stress during a given time period, particularly stressful moments within this period can either take on a disproportionate importance or be masked. Continuous physiological assessment is much less susceptible to this bias. It can be measured in real-time during the task of interest, does not rely on retrospective judgment and, therefore, allows for a much more fine-grained analysis of particularly stressful moments. The psychophysiological assessment of medical communication is a relatively new area of research, however. Although the use of psychophysiological assessment to investigate physicians' stress reactions in BBN was suggested many years ago (Baile et al., 2000), few studies in the field of

BBN in medical communication have used this methodology so far. The present article reviews these papers and aims to:

- provide an overview of current knowledge on physicians' psychophysiological stress reactions in BBN consultations,
- discuss the methodological aspects of these studies, and
- suggest directions for future research.

To date, reviews on BBN have concentrated on various guidelines for BBN (Ptacek and Eberhardt, 1996; Harrison and Walling, 2010), on the effectiveness of communication training for BBN (Rosenbaum et al., 2004) and on cancer patients' preferences regarding the disclosure of bad news (Fujimori and Uchitomi, 2009). The present review is the first to focus on the bearer of bad news and to critically review research on the psychophysiological responses of physicians and medical students during BBN.

2. Methods

We performed a literature research in the Medline and PsychINFO databases using a combination of the keywords “communication”, “physician OR doctor”, “patient”, “bad news”, “stress” and “physiolo\$”. Only studies published before 2017 were considered. In order to be included in the review, studies had to fulfill the following criteria: (a) the population studied consisted of physicians or medical students; (b) the study design was experimental and included at least one condition in which participants had to break bad news to a patient (i.e. BBN scenario); (c) the dependent variables included at least one physiological measure; and (d) the language of publication was English. These criteria returned four studies (Hulsman et al., 2010; Meunier et al., 2013; Shaw et al., 2013; van Dulmen et al., 2007), and a search of their reference lists and citations identified three additional studies relevant to the review (Brown et al., 2009; Cohen et al., 2003; Shaw et al., 2015).

3. Results: overview of studies on physicians' psychophysiological reactions to BBN consultations

The seven studies identified are listed in Table 1, which shows their major sample characteristics. Table 2 provides information on the study assessment scenarios, methods and time points applied, as well as the physiological indicators measured. The seven studies and their main findings are summarised in alphabetical order by first author in the paragraphs below, followed by a comparison of the study results.

The study by Brown et al. (2009) aimed to determine whether consultation types were related to physicians' stress responses. Twenty-four physicians participated in two counterbalanced simulation scenarios, i.e. breaking good news (BGN) and BBN. Their physiological stress responses were assessed using heart rate (HR) and measures of heart rate variability (HRV). This study did not assess any self-reported

Table 1
Sample characteristics of the reviewed studies.

Authors (year)	Sample	n	Age (M ± SD)	Sex (% female)	Origin
Brown et al. (2009)	Novice doctors (interns or residents with 1–3 years' experience)	12	29 ± 6	58	Australia
	Expert doctors (> 4 years' experience)	12	42 ± 8	25	
Cohen et al. (2003)	Medical students (3rd or 4th year)	25	27.1 ± 1.8	40	US
Hulsman et al. (2010)	Medical students (4th or 5th year)	20	NA	50	The Netherlands
Meunier et al. (2013)	Residents (trained in communication)	50	28.0 ± 3.0	68	Belgium
	Residents (untrained in communication)	48	28.0 ± 2.1	60	
Shaw et al. (2013)	Junior medical officers (interns and residents)	9	36.6 ± 11.2	32	Australia
	Senior medical officers	22			
Shaw et al. (2015)	Same sample as in Shaw et al. (2013)				
van Dulmen et al. (2007)	Medical students (2nd year)	57	NA	84	The Netherlands

Notes: NA “not available”.

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