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Gendered symptom presentation in acute coronary syndrome: A cross sectional analysis

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ABSTRACT

Background: The international literature suggests that the symptom presentation of acute coronary syndrome may be different for men and women, yet no definitive conclusion about the existence of gendered presentation in ACS has been provided.
Objective: This study examines whether gendered symptom presentation exists in a well-defined sample of men and women with ACS.
Design and setting: A cross-sectional analysis of baseline data pertaining to symptom experience and medical profiles were recorded for all ACS patients who participated in a multi-centered randomized control trial, in 5 hospitals, in Dublin, Ireland.
Participants: : Patients were deemed eligible if they were admitted through the Emergency Department (ED) with a diagnosis of ACS, if they were at least 21 years of age and able to read and converse in English. Patients were excluded if they had serious co-morbidities, cognitive, hearing or vision impairment.
Methods: Patients were interviewed 2–4 days following their ACS event and data was gathered using the ACS response to symptom index.
Results: The study included 1947 patients of whom 28% ($n = 545$) were women. Chest pain was the most commonly experienced symptom in men and women, reported by 71% of patients. Using logistic regression and adjusting for clinical and demographic variables, women had greater odds of experiencing shortness of breath (50% vs 43%; odds ratio [OR] = 1.32; 95% CI = 1.08–1.62; $p = .006$) palpitations (5.5% vs 2.8%; OR = 2.17; CI = 1.31–3.62; $p = .003$) left arm pain (34% vs 30.5%; OR = 1.27; CI = 1.02–1.58; $p = .03$) back pain (7.5% vs 4.8%; OR = 1.56; CI = 1.03–2.37; $p = .034$) neck or jaw pain (21.5% vs 13.8%; OR = 1.84; CI = 1.41–2.40; $p = .001$) nausea (28% vs 24%; OR = 1.30; CI = 1.03–1.65; $p = .024$) a sense of dread (13.4% vs 10.5%; OR = 1.47; CI = 1.08–2.00; $p = .014$) and fatigue (29% vs 21.5%; OR = 1.64; CI = 1.29–2.07; $p = .001$) than their male counterparts.
Conclusions: Although chest pain is the most commonly experienced symptom by men and women, other ACS symptomology may differ significantly between genders.

What is already known about the topic?

- Patient decision delay remains a major obstacle to the receipt of timely reperfusion therapy in patients with ACS.
- Difficulties in symptom interpretation may contribute to help-seeking delays in patients with ACS.
- The evidence pertaining to gendered differences in symptom presentation is inconsistent.

What this paper adds

- Women experience a greater diversity and number of 'atypical' symptoms than men.

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- Women and men experience different symptoms across the three ACS diagnoses (i.e. STEMI, NSTEMI and unstable angina).
- The interaction between gender, symptoms and diagnosis provides a new dimension to the debate on gendered symptom presentation in ACS.

1. Background

Acute coronary syndrome (ACS) is a patho-physiological continuum which includes unstable angina, non-ST elevation myocardial infarction (MI) and ST elevation MI (Chen et al., 2005). Each of these potentially life-threatening conditions demands early and accurate diagnosis, if optimal survival opportunities are to be realised. In the presence of MI, early initiation of reperfusion therapies can prevent death and limit extension of MI (GISSI, 1986; ISIS-2, 1998; Thiele et al., 2007). The ACS pathway of care from onset of symptoms to the initiation of life-saving treatments is therefore an extremely important determinant of survival outcome. It is imperative that (1) patients recognize the urgency of their symptoms and seek early medical attention, (2) emergency medical services and healthcare professionals promptly identify these symptoms as cardiac, and (3) appropriate life-saving treatments are initiated expeditiously.

The international literature suggests that the symptom presentation for women and men with acute coronary syndrome may be quite different, yet no definitive conclusion about the existence of gendered symptomology in ACS has been provided. Some studies suggest that men with MI are more likely than their female counterparts to experience chest pain (Arslanian-Engoren et al., 2006; Culic et al., 2002; Milner et al., 2004), whilst other studies have found no gender differences in relation to this classic symptom (DeVon et al., 2008; Kosuge et al., 2006; Noureddine et al., 2008). Several others have suggested that women are more likely than men to experience atypical symptoms (Culic et al., 2002; Goldberg et al., 1998; Meschack et al., 1998) however the precise combination of atypical symptoms experienced by women with ACS varies across the studies (Canto et al., 2007; Shin et al., 2009). In contrast, some studies have reported no gender differences in the number of typical or atypical symptoms experienced by men and women (Bunde and Martin, 2006; Martin et al., 2004) whilst Milner et al. (2002) and Patel et al. (2004) purport that typical cardiac symptoms were the best predictors of MI in both men and women.

Such inconsistencies in the literature have emerged largely as a result of wide variations in methodological approaches, in particular, the approaches taken to measure and collect data. In a review of 69 studies examining symptom presentation in ACS/MI, Canto et al. (2007) suggest that the majority of studies relied heavily on medical chart review (Arslanian-Engoren et al., 2006; Berg et al., 2009; Culic et al., 2002), a method which is notoriously flawed (Canto et al., 2007; Shin et al., 2009), whilst others used self-reports such as checklists (Chen et al., 2005; DeVon et al., 2008; Noureddine et al., 2008) or qualitative interviews (McSweeney and Crane, 2000; McSweeney et al., 2003; Vodopiutz et al., 2002; Zuzelo, 2002). Many studies which gathered their data from verbal reports or interview did so retrospectively and depending on the timing of these self-reports, may have been subject to varying degrees of recall bias (Dracup, 2007). Inclusion criteria also varied across studies as some samples included only MI patients who had experienced chest pain (Goldberg et al., 1998, 2000; Kudenchuk et al., 1996), whilst others examined varying numbers of typical and atypical symptoms across the spectrum of ACS. Some studies included only female patients and based their conclusions on that single sample (McSweeney and Crane, 2000; McSweeney et al., 2003; Shlipak et al., 2001), whilst the remainder compared the symptoms of women and men. Sample sizes in the quantitative studies ranged considerably from $N = 94$ to $N = 434\,877$, thus insufficient power may have limited the findings of smaller reports. Due to these inconsistencies and limitations, Canto et al. (2007) suggest that the many gender differences reported in the literature were not of sufficient magnitude to warrant tailoring a gendered approach to ACS health messages for men and women.

Addressing the concerns expressed by Canto et al. (2007), Shin et al. (2010) conducted a meta-analysis of 26 articles and dissertations comparing symptoms of ACS in men and women. Within this meta-analysis Shin et al. (2010) generated quantitative estimates of effect size enabling them to determine whether the magnitude of effect was sufficient enough to warrant gender-specific public health campaigns. In addition, they performed subgroup analyses by assessment strategy to determine if particular methods produced different symptom findings and finally, they evaluated gender differences for a wide range of atypical and typical symptoms. Shin et al. (2010) concluded that women with ACS were more likely to experience nausea/vomiting, palpitations, back pain, and loss of appetite than their male counterparts and less likely than men to experience diaphoresis and chest pain. They purport that the magnitude of the gender effect was such that a gender-specific public health campaign was indeed warranted (Shin et al., 2010).

For most symptoms, Shin et al. (2010) report that the measurement strategy had no effect on outcomes, however this is disputed by others who suggest that a standardised method of data collection is needed in future studies (Canto et al., 2007; Dracup, 2007). Indeed, in an earlier paper, Shin et al. (2009) recommend that careful attention be paid to the type of questions used to assess symptom experience in men and women, suggesting that closed and open-ended enquiries produced different answers from ACS patients. They add that the use of more comprehensive assessment strategies which capture the total experience of ACS may lead to more definitive conclusions regarding gendered symptomology in ACS (Shin et al., 2009).

1.1. The current study

It is clear that the existing literature has still not provided sufficient weight of evidence to support or dispute the existence of gendered symptomology in ACS