

Research

A concept analysis of the bystander effect in road traffic injuries: A hybrid model

Elham Sepahvand PhD(Nurs)¹; Hamidreza Khankeh PhD, is Professor of Nursing and Post-Doctoral in Emergency and Disaster^{2,3};
Mohammadali Hosseini PhD, is Associate Professor of Nursing¹; Behnam Akhbari PhD, is Professor in Physiotherapy⁴

Affiliations:

¹Department of Nursing, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

²Research Center of Health in Emergencies and Disasters, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

³Department of Clinical Science and Education, Karolinska Institutet, Södersjukhuset, Stockholm, Sweden

⁴Department of Physiotherapy, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

<https://doi.org/10.33151/ajp.17.736>

Abstract

Introduction

The bystander effect, or bystander apathy, occurs at the scene of road traffic accidents. It is a theory that states that individuals are less likely to offer help to a victim when there are other people present. This study aims to perform a concept analysis of the bystander effect at the scene of road traffic accidents in the Iranian context.

Methods

A concept analysis was performed using a hybrid method recommended by Schwartz-Barcott in three phases: a theoretical analysis, field work and final analysis. In the theoretical phase, a literature review was conducted using the databases PubMed, Scopus, Elsevier, Ovi and Iran-doc, with the relevant studies analysed. In the field work, interviews were carried out with eight medical emergency personnel followed by a qualitative content analysis of the transcriptions. In the last phase, the final analysis was performed to provide a clear definition of the concept.

Results

In the theoretical phase related to the concept of the bystander effect, some characteristics, such as the presence of strangers, social influence, pluralistic ignorance, self-safety, victim's unstable conditions, lack of awareness and presence of medical emergency personnel were identified. In the final analysis phase, a definition was achieved to be provided in the following sections, by integrating the two theoretical and field work phases.

Conclusion

The results of this study could pave the way for future studies to further develop the concept of the bystander effect in different cultures and help develop a tool for the further assessment of this phenomenon.

Keywords:

bystander effect; medical emergencies; traffic accidents; hybrid model

Corresponding Author: Hamidreza Khankeh, hamid.khankeh@ki.se

Introduction

Pre-hospital care includes making the first official contact with emergency medical personnel, providing medical care, and transferring the patient to a medical centre for more effective and advanced services (1). There may be one or several bystanders at the scene of road traffic accidents trying to help the victim until the medical emergency personnel arrive (2). Helping behaviour during emergencies is influenced by the character of observers and social factors such as the presence of bystanders (3). A bystander is defined as a 'non-professional person present at the scene of an accident, who cannot perform any professional interventions' (4) and, a 'person near the scene of an incident who observes the event but does not intervene' (5). Examining bystander behaviour at the scene of an emergency indicates that real situations might result in circumstances in which a person in need of help is not aided or supported by bystanders (6). In fact, the bystander effect is a social psychological phenomenon in which a bystander does not offer help to victims when other people are present at the scene (7). The bystander effect is also defined as a situation in which bystanders hesitate to assume responsibility for helping the victim at the scene of an emergency so they tend not to participate because of feeling that other people at the scene would undertake that responsibility (8). Darley and Lantane investigated experimentally an aspect of this phenomenon called 'the number of bystanders in an emergency'. They found an inverse correlation between the number of bystanders present at the scene and the rate of their interventions (9). According to Darley (9) and Lantane (10), the bystander effect is a phenomenon in which when bystanders see that others are present at the scene of critical situations, such as road traffic accidents, they offer no help, stay away from the scene and shift the responsibility for helping the victim to other people. In emergency situations, a lot of confusion occurs at the scene, which prevents the occurrence of further reaction on the part of bystanders. From both theoretical and practical perspectives, the bystander effect plays a crucial role in understanding helping behaviour. The presence of a large number of bystanders at the scene of an accident reduces the likelihood of their interventions in helping the victim (10). Darley and Lantane proposed a 5-step psychological process for the bystander effect. They suggest that in order for an intervention to take place, the bystander needs to (a) observe a critical situation; (b) interpret the situation as an emergency; (c) form a sense of individual responsibility; (d) believe s/he has the necessary skills of intervening successfully, and (e) reach a conscious decision to help the victim (11). Lantane and Nida argued that the bystander effect occurs most likely in a situation in which nobody intervenes because they fail to interpret the situation as an emergency, so the situation is not perceived as an emergency (10). Many situational factors, such as the presence of other individuals, similar experiences in the past, the victim's appearance, and the feeling of guilt could predict the pattern of bystander intervention and helping behaviour.

In Mason's study, the bystander effect was defined as not exhibiting helping behaviour due to the presence of people at the scene and the non-emergency state of the situation (12). Gottlieb and Carver defined the bystander effect as 'the situation in which bystanders at the scene are not acquainted with each other and have no face-to-face interactions with one another, so they tend to withdraw from the scene; therefore, the speed of the response to the emergency is reduced' (13). In contrast, Bommel defined the bystander effect as 'when bystanders see others at the scene, they are more willing to offer help, so their helping behaviour is reinforced, especially when they are looking for attention and fame in front of others' (14). In the same vein, Hardy and Vugt stated that one of the potential benefits of helping behaviour, which is often ignored in defining the concept of the bystander effect, is the desire for fame. For example, if individuals know they are to be rewarded, they will be more likely to exert effort to help others (15). Gracia and Weaver also defined the bystander effect as a situation in which 'an individual facing a patient in distress knows that if others are present at the scene, access to care and appropriate response to the patient's state will be less than in the case when only one person is present at the scene, but s/he is fully aware of the patient distress' (16). In addition to the concept of the bystander effect, Darley and Lantane introduced another concept called 'the diffusion of responsibility', thereby indicating that 'as the number of people involved in an incident increases, each of them assumes less responsibility for offering help to the victim' (9). Furthermore, Darley proposed the concept of 'social influence' together with other concepts. According to this concept, 'an individual observes others' behaviour at the scene to assess the emergency situation. If the latter are only bystanders, the individual willing to help will also be likely to interpret the situation as non-emergency, so s/he refrains from offering any help' (17). However, despite a lot of evidence supporting the occurrence of the bystander effect, Carmer and colleagues argued when bystanders feel they should intervene, the presence of others at the scene could not prevent them from offering help to the victim in an emergency. According to them, when an individual feels s/he should intervene, the intervention takes place as a personal duty (18). Chekroun and Baruer offered a classic definition of the bystander effect in their study as 'people's tendency towards negative and deviant behaviour reinforced by the presence of others' (19). This phenomenon has been examined in several studies, with its concept defined in various ways, which could be due to the differences in the background and culture of different communities studied (20-23). Given the importance of the concept of the bystander effect and that of the background and structure governing the scene of road traffic accidents, it seems necessary to develop the concept so as to understand it better. There are several approaches to developing a concept. The process of concept analysis leads to the clarification of a concept by studying its main elements as well as determining its nature and function. In addition, because concepts are the foundations of theories, their clarification results in the expansion of knowledge, thereby reaching a common

perception of phenomena as well as preventing conflicts and personal impressions (24). Phenomena viewed based on individuals' experiences in clinical practice should be examined carefully so that their characteristics are identified; the best way to achieve this goal is to define the phenomenon or the concept under study and evaluate it comprehensively (25). The hybrid method is an appropriate approach to the analysis of concepts in clinical practice; therefore, it is necessary that the concept of the bystander effect be investigated in the Iranian context in terms of participants' experiences and based on a hybrid approach.

Methods

Study design

A hybrid model was used to analyse the bystander effect recommended by Schwartz- Barcott. This model provides a method for conceptualising and clarifying the concept as well as developing theories and consists of three phases: theoretical analysis, field work, and final analysis (26). In this study (the first phase being the theoretical analysis), a review of the literature was conducted (for articles published by 2019) in the databases of PubMed, Scopus, Ovid and Elsevier, as well as the two Iranian databases of SID and Irandoc using the keywords 'laypeople,' 'laypersons,' 'bystanders,' 'bystander intervention,' 'bystander effect,' 'traffic accidents,' and 'car accidents'. Next, articles found in the search results were evaluated. First, article abstracts were reviewed, and only the full texts of relevant articles were evaluated. Appropriate codes were assigned to extract antecedents, attributes and consequences using a qualitative content analysis. In the second phase (or the field work), the researcher determined the work definition for the field work. In the final analysis, an overall analysis of the data as well as that of the results of the two previous phases were conducted with a comprehensive definition of the concept provided according to the Iranian background and context.

Setting and sample

This research was done in a pre-hospital emergency setting. Eight participants were selected from those experienced in working in pre-hospital emergency settings and road traffic accidents. Most had work experience in road traffic accidents, with the average experience of 6 years.

Ethical considerations

This study was conducted with the permission of the authorities and Ethics Committee of the University of Social Welfare and Rehabilitation Sciences. After obtaining written informed consent forms from the participants, face-to-face interviews were conducted. Participation was voluntary.

Data collection

To collect clinical data, the researcher was required to be present at the scene and take field notes. Purposive sampling

was done for eight participants. The participants were asked to talk freely and share their experiences. The data collection method in this study was semi-structured interviews. The interviews started with the question: 'Would you please give me a description of one of your missions involving a traffic accident?' The researcher then proceeded with more specific questions, such as: 'How did you find the people present at the scene of the accident?', and 'How did people react to the situation?' By analysing the first interviews, subsequent interview questions were determined. Each interview lasted from 20 to 60 minutes on average. Data saturation continued until the concept was defined. All interviews were recorded with audio tape recorders. For the participants' comfort, interviews were conducted in the workplace.

Data analysis

In this research, a qualitative content analysis was performed. The interviews were recorded and then transcribed. Initial codes were extracted from the analysis of the interviews. Next, the related codes were transformed into categories and subcategories. Data saturation was achieved after the eighth interview, and data trustworthiness was enhanced with the continued presence of the researcher in the field, his long-term involvement with the data, and by making use of the opinions of two expert professors (27).

Results

Theoretical phase

Concept characteristics and definition

Hall described bystanders as people who might intervene in the scene and manage the scene until pre-hospital personnel arrive, or those who just watch the scene (2). In another definition offered by Cronwell, bystanders are those who attend the scene before others in pre-hospital emergency situations, as well as those who might provide care to the victim at the scene (28). Similarly, Pallavisarji regarded bystanders as those who would first attend the scene and take necessary measures in terms of the safety and management of the scene (29). At the end of the theoretical phase, the characteristics of the concept were determined. These characteristics are an indispensable part of a concept without which no clear picture of the concept would be produced (30). After the extensive review of the literature (Table 1), the following characteristics were identified for the bystander effect.

Presence of strangers

When bystanders in an emergency do not know others at the scene, they feel confused and try to interpret what they hear so as to decide how to take action. In such a situation, the anxiety and fear of others' reactions to and interpretations of their actions hinder them from helping. However, when bystanders are familiar with each other, they are unlikely to misinterpret each other's interventions (13).

Pluralistic ignorance

This means that a bystander observes others at the scene, and if they do not interpret the situation as an emergency, a serious case, and a damaging incident, the bystander does not do either; in other words, s/he regards the situation as non-emergency and refrains from offering help. Therefore, individuals' actions are guided by those of others (17).

Diffusion of responsibility

When a bystander is alone at the scene, s/he feels to be in charge of the full responsibility for offering help, and in case of failing to intervene, s/he will suffer from a sense of guilt and self-blame. In the presence of others at the scene, however, the responsibility is diffused among individuals, and the bystander resolves the conflict between intervention and non-intervention so that s/he will be less likely to intervene and offer help (9).

Social influence

A bystander, in the presence of others and influenced by their interpretations, might regard the situation as non-emergency and fail to consider the offering of help urgent (31).

Self-safety

Humans are social animals with an innate desire for helping others by any possible means provided that it does not endanger their own comfort and wellbeing (10).

The consequences of the bystander effect

The bystander effect at the scene of emergency events could reduce the impact of helping behaviour (9). Interventions and decisions made by bystanders at the scene of accidents have a source of emotion, which are not only detrimental to the victim but also lead to complications, including secondary injuries (32). In addition, many individuals who attend the scene are reluctant to help, so they just watch. The presence of laypeople at the scene and unplanned interventions by people with heroic motives cause the patient to be taken to the hospital. The complications of delay, including the increase in the length of hospitalisation, impose high costs to society (21).

The working definition of the theoretical phase

The bystander effect is a socio-psychological phenomenon in which an individual fails to provide help to the victim at the scene in the presence of other people. According to this effect, on an increase in the number of bystanders at the scene, the likelihood of offering help to the victim is reduced. When a person is alone at the scene of an accident, s/he feels fully responsible for offering help to the victim, considers the scene an emergency based on their experiences and interpretations, so s/he intervenes. In contrast, in the presence of other bystanders at the scene, this sense of responsibility is diminished, and the person influenced by others' reactions and interpretations might interpret the situation as non-emergency; thus, s/he feels reluctant to offer help.

Field work phase

One of the characteristics identified in the field work phase was the relationship of the people at the scene, ie. being strangers or relatives. When the bystanders and the victim are relatives, the former are more likely to show emotional reactions, and their interventions are more tangible. They may even come into conflict with others and/or with the medical emergency personnel for not offering help.

'People's participation at the scene of an accident is much more when the victim is one of their relatives. The reason is that they see distressing scenes, lose their control and fail to offer help. In such cases, they bother us a lot and keep complaining why we are late. They do not even allow us to take other victims (other than their relatives) to the hospital. We had a case in which they started hitting us with picks and shovels; thus, as there were no police around, we had to leave the scene immediately, and they took the victim to a medical centre by themselves'. EMS personnel, 32 years of age

Unstable conditions of the victim

The multiple traumas and profuse bleeding of the victim make bystanders interpret the situation as critical. The fear of responsibility, infectious diseases, secondary traumas following wrong actions and the distress of harrowing scenes are considered as obstacles in the way of providing help to the victim.

'When people usually watch a scene with the victim's head smashed or his arm or leg cut off, they do not intervene because they get scared; they just stand by, look and do not get closer. In addition, even when we ask them to give us a hand, for example to hold the guy's hand so that we can bandage it, they simply do not do as such'. EMS personnel, 35 years of age

'When people see harrowing scenes, they get perplexed and could not be that useful. They also keep crying and wailing, so they stress us a lot'. EMS personnel, 26 years of age

'When the victim has bone fractures, or when s/he gets badly wounded or has uncontrollable bleeding, we see people standing by and suffering from nausea, vomit and even faint'.

'People are now more aware than in the past as they do not touch the victims because they have heard they may damage the spinal cord of the victims and leave them paralysed, so they simply do not get involved'. EMS personnel, 30 years of age

Lack of awareness

The decision by bystanders not to intervene at the scene could be due to their lack of knowledge about first aid, their inability to assess the extent of damage, as well as the need for first aid.

'For example, once we asked people at the scene to help us, but they told us they wished they had learned how to do so; in other words, they wanted to help but did not know how to do, so they preferred to stay out'. EMS personnel, 35 years of age

'Those who have taken Red Crescent courses would often offer help; for example, once we encountered a case who had kept the airway open with a spoon as there was no other suitable tools available. They sometimes manage the scene as well'. 115 EMS personnel, 27 years of age

Disclaimer

When a bystander faces victims alone in critical conditions, s/he feels obliged to intervene and save them. However, when other bystanders are present at the scene, each of them tries to disclaim any responsibilities, shift them to others and withdraw from the scene and interventions.

'When there are more people out there at the scene, nobody gets involved; they all just stand there and look or even record videos. When there are lots of people there, they evade responsibility. As there are many people there, they think one person will help, yet nobody does so. However, when there are few people present at the scene, conditions are so much better and they often help us. When there are a large number of people at the scene, they really do nothing but prevent us from handling the victim smoothly'. EMS personnel, 25 years of age

Gaining influence from certain individuals and pluralistic ignorance

Individuals' perceptions of the scene could impact their willingness to respond. Watching the victim's conditions and assuming that first aid is unnecessary make other bystanders at the scene behave based on this assumption so as not to provide effective interventions.

'When a large number of people, aged 30 or 40, are around getting in your way, and two or three of them always think of themselves as know-it-alls by trying to get involved and keep ordering 'do this and don't do that, take him fast,' and the like, they annoy people and prevent us from doing our work appropriately'. EMS personnel, 27 years of age

'Sometimes a guy who has taken a first aid course with insufficient information keeps talking about IV or such technical issues, and people think he really knows better, so they get influenced'. EMS personnel, 31 years of age

'Some people try to help just to show off, especially in city accidents; for example, a guy starts shouting to us that we have been late, and then he himself gets into the scene and takes some measures while others follow him as well'. EMS personnel, 35 years of age

Presence of medical emergency personnel

Medical emergency personnel are responsible for treating and transferring the victim to the hospital, so people regard them as the saviours of the patient.

'I have often seen people telling each other that the emergency personnel are on the way, and that nobody should touch the victim till they arrive; that is to say, they actually know that nobody should try to touch the victim until the emergency personnel arrive'. EMS personnel, 32 years of age

A practical definition

The bystander effect is a phenomenon occurring at the scene of road traffic accidents, and in general, in other emergencies. In this phenomenon, bystanders present at the scene of the accident observe the situation. First, bystanders feel obliged to offer help to the victim, yet the unstable conditions of the victim and the fear of secondary damage make them withdraw from the scene. In addition, the presence of other bystanders at the scene makes bystanders disclaim any responsibilities for helping the victim and shift them to others. Being influenced by others' interpretation of the situation as an emergency or non-emergency is another factor that reinforces this behaviour.

Discussion and conclusion

This study aimed to clarify the concept of the bystander effect occurring at the scene of road traffic accidents by presenting and defining various characteristics of this phenomenon. The results of the literature review and the field work phase showed that the bystander effect often occurs at emergency scenes. In this phenomenon, on an increase in the number of bystanders at the scene, the instances of helping behaviour decrease, and each individual regards others responsible for providing help and interventions. In such situations, one or more persons might intervene as the leader to manage the scene and their perceptions of the scene as well as the need for offering help to the victim influence others (9,10,31). A systematic review study reported that the presence of passive bystanders in critical situations reduces the amount of help; however, the bystander effect is expressed less in dangerous situations (33). The bystander effect is more likely to occur where people present at the scene are strangers, and their knowledge of first aid is limited.

Some characteristics determined in the field work phase were consistent with those identified in the theoretical phase. In addition, most characteristics of the theoretical phase appeared frequently in the field work phase. However, the diffusion of responsibility, pluralistic ignorance and the unstable conditions of the victim were identified as the main characteristics of this phenomenon.

The main characteristic of the bystander effect is the diffusion

of responsibility. When a person is alone in dealing with an emergency, he experiences the 'focussing' of the responsibility on himself. The urge to help as induced by the victim's distress would focus entirely on him (37). However, sometimes many people present at the scene just witness the scene, with each of them shifting the responsibility to others (9). Darley and Latane found out that there is an inverse correlation between the speed of bystander intervention in an emergency and the number of bystanders perceived to be present (11).

Pluralistic ignorance, ie. interpreting the situation based on the influence exerted by others' behaviour, is another characteristic identified in the field work phase, which is also supported in the literature. This finding could be explained based on the 'arousal: cost-reward model'. It starts with the aversive arousal caused by witnessing the victim's need or distress. The arousal is sometimes experienced as an emotionally unpleasant feeling, so one becomes motivated to mitigate it. It is the balance of cost-reward assessments made by an individual. Costs for not helping occur when no assistance is provided, which may include experiences, such as feeling troubled because someone in need keeps suffering, or receiving criticism from others (34-36). Lantane and Bickman argued that an individual decides to intervene and offer help based on others' perceptions and performance. When people at the scene interpret the situation as non-emergency, the individual refrains from offering help as well (6,31). Mason pointed out that when the situation is vague, and when the individual interprets the situation as non-emergency only based on personal judgement, s/he stays out of the scene (12).

Lack of awareness and necessary knowledge about the basics of first aid were among the other characteristics identified during the field work phase. The lack of knowledge at the scene of road traffic accidents could be considered from a number of aspects. One of the aspects overlooked is concerning the interventions people make to help the injured person, which due to unfamiliarity with the principles of first aid sometimes lead to increased damage or even more disabilities to the victim. Providing inaccurate and incomplete information, as well as showing emotional reactions, leads to the loss of the 'golden time' to provide effective care, which may even lead to the creation of a new incident (20,21). Bickman attributed individuals' reluctance to offer help to factors such as their inability to help due to lack of knowledge and to considering interventions unnecessary (37). Thus, on promoting laypeople's knowledge, the bystander effect could be positive. To corroborate this, Bommel et al reported that with an increase in the level of public awareness the bystander effect could be reversed (14).

The empathy-altruism hypothesis, consistent with our finding, explains that helping behaviour results from the feelings of empathy and compassion towards others, which generates an altruistic motivation directed towards the ultimate goal

of improving another person's welfare. The help depends on the scene conditions. When a person is not familiar with other witnesses at the scene and does not have face-to-face interactions with them, the speed of responding to an emergency is reduced. Individuals are less likely to fear the misinterpretation of friends at the scene than that of strangers (38-40). In addition, social influence could be less likely to cause friends to decide there is no emergency. Social influence makes the person consider the situation as non-emergency and think there is no need to act. Social influence is the reason that strangers are faced with the moral dilemma of whether to intervene (6).

In the field work phase, the presence of 115 EMS was identified as one of the characteristics of the bystander effect. The participants in this study repeatedly alluded to this characteristic and acknowledged that the presence of the medical emergency personnel was the factor hindering bystanders from intervening in the scene and helping the victim. The bystanders, therefore, tended to shift the responsibility for saving the lives of the victims and transfer them to the medical emergency personnel. This could be due to the popular view about the 115 EMS personnel that they are able to handle the scene and save the lives of the victims single-handedly, and that when they are present at the scene, no help or intervention from others will be necessary.

The victim's unstable conditions were the other finding in the field work phase. The affliction of numerous traumas to the victim, the victim's conditions deteriorating due to hypotension following active bleeding, or having symptoms such as shortness of breath, make the bystander feel afraid of primary interventions and first aid. The fear of responsibility, infectious diseases and affliction of secondary traumas due to unplanned interventions, as well as the psychological distress of seeing scary scenes, are among obstacles to providing assistance to the victim.

The results of this study could be a basis for future research to further develop the concept of the bystander effect occurring at the scene of road traffic accidents in different cultures. According to the results, the bystander effect is a phenomenon in which a person is placed in the position of offering help to the victim. The presence of others at the scene, the victim's unstable conditions, lack of knowledge, and being influenced by others' behaviour are the factors effective in disclaiming the responsibility and shifting it to the medical emergency personnel, thereby refraining from offering help to the victim. The analysis of the bystander effect indicates that this concept includes a set of behaviours and characteristics partly guided by cultural background and context. The further development of this concept could help expand the existing body of knowledge in the field of pre-hospital emergencies as well as develop models and theories about road traffic accidents. Developing a context centred tool based on the results of this study is highly recommended.

Acknowledgement

The authors thank the staff of emergency medicine and authorities of the University of Social Welfare and Rehabilitation Sciences.

Competing interests

The authors declare no competing interests. Each author of this paper has completed the ICMJE conflict of interest statement.

Funding

This work was supported by a doctoral thesis funding grant from the University of Social Welfare and Rehabilitation Sciences.

Author contributions

Conceptualisation, first author and second author; methodology, second and third authors; formal analysis, first, second and third author; investigation, fourth author; writing – original draft preparation, all authors.

Table 1. Studies into the bystander effect phenomenon at the scene of an emergency

Author	Background under study	Characteristics	Antecedents	Consequences
Hortensius, 2014	Effect of group size on helping behaviour in an emergency	Social influence of the presence of others, observing the person, and increasing helping behaviour	Being observed by others, strong emotional reactions to the situation	Increasing helping behaviour
Bommel, 2012	Bystander effect and increasing general self-awareness	Increasing general self-awareness and increasing helping behaviour	Concerns about others' perceptions of behaviour, sense of responsibility, presence of camera, or fear of being labeled	Increasing helping behaviour and increasing cost-effectiveness of behaviour
Tice, 1985	Relationship between personality and gender and their effects on helping behaviour in emergency situations	Individual differences and personality traits reduce the instances of helping behaviour	Presence of people, lack of self-confidence, lack of sense of independence, being male, personality traits	Apathy and reluctance to help
Darley, 1968	Bystander intervention in emergency situations	Presence of others in an emergency reduces the level of individual responsibility	Fear of feeling embarrassed in front of others, the presence of males	Reluctance to help
Latene, 1969	Effect of the presence of friends and strangers on the intervention of bystanders on the scene	Diffusion of responsibility, pluralistic ignorance, and presence of strangers	Individual experiences, not taking the situation seriously, predilection	Worsening of the situation of the victim
Mason, 1976	Bystander effect as a function of emergency	Avoiding help due to the presence of people and when the situation is not an emergency	Vague situation and non-emergency conditions	Staying out the scene without offering help
Bickman, 1971	Bystander's ability to intervene in emergency situations	Inability to provide help and shifting responsibility onto someone else	Lack of knowledge, personal judgement, and interpreting the situation as non-emergency	Avoiding intervening in the scene and providing help to the victim
Bickman, 1972	Social influence of the diffusion of responsibility in an emergency	Gaining influence from others and regarding the situation as non-emergency	Individual's interpretations of emergency and of others' behavior present on the scene	Avoiding helping others
Gottlieb, 1980	Bystander effect and face-to-face interactions	Lack of face-to-face interactions reduces the speed of response to emergency situations	Individual's behaviour performed in an emergency	Increased costs
Zoccola, 2011	Embarrassment and performing no helping behaviour	Fear of embarrassment in front of others and reducing helping behaviour	Bitter experiences of the past, social pressures	Staying away from the scene and being an observer

References

1. Elbashir K, Gore RJ, Abuaaraki T, et al. Prehospital emergency care and injury prevention in Sudan. *Afr J Emerg Med* 2014;4:170-3.
2. Hall A, Wooton K, Hutton A. Bystander experiences at and after a motor vehicle accident: a review of the literature. *Australasian Journal of Paramedicine* 2013;10.
3. Hortensius R, Schutter DJ, Gelder B. Personal distress and the influence of bystanders on responding to an emergency. *Cogn Affect Behav Neurosci* 2016;1-17.
4. Available at: www.dictionary.com/browse/bystander
5. Available at: <http://dictionary.cambridge.org/dictionary/english/bystander>
6. Bickman L. Social influence and diffusion of responsibility in an emergency. *J Exp Soc Psychol* 1972;8:438-45.
7. Available at: https://en.wikipedia.org/wiki/Bystander_effect
8. Schneider FW, Gruman JA, Coutts LM, editors. *Applied social psychology: understanding and addressing social and practical problems*. 2nd edn. Sage. London: 2011.
9. Darley JM, Latane B. Bystander intervention in emergencies: diffusion of responsibility. *J Pers Soc Psychol* 1968;8:377.
10. Latané B, Nida S. Ten years of research on group size and helping. *Psychol Bull* 1981;89:308.
11. Darley JM. *The unresponsive bystander: why doesn't he help?* New York: Appleton-Century Crofts, 1970.
12. Mason D, Allen BP. The bystander effect as a function of ambiguity and emergency character. *J Soc Psychol* 1976;100:145-6.
13. Gottlieb J, Carver CS. Anticipation of future interaction and the bystander effect. *J Exp Soc Psychol* 1980;16:253-60.
14. van Bommel M, van Prooijen J-W, Elffers H, Van Lange PA. Be aware to care: public self-awareness leads to a reversal of the bystander effect. *ibid.* 2012;48:926-30.
15. Hardy CL, Van Vugt M. Nice guys finish first: the competitive altruism hypothesis. *Pers Soc Psychol Bull* 2006;32:1402-13.
16. Garcia SM, Weaver K, Moskowitz GB, Darley JM. Crowded minds: the implicit bystander effect. *J Pers Soc Psychol* 2002;83:843.
17. Darley JM, Teger AI, Lewis LD. Do groups always inhibit individuals' responses to potential emergencies? *ibid.* 1973;26:395.
18. Cramer RE, McMaster MR, Bartell PA, Dragna M. Subject competence and minimization of the bystander effect. *J Appl Soc Psychol* 1988;18:1133-48.
19. Chekroun P, Brauer M. The bystander effect and social control behavior: the effect of the presence of others on people's reactions to norm violations. *Eur J Soc Psychol* 2002;32:853-67.
20. Alinia S, Khankeh H, Maddah SSB, Negarandeh R. Barriers of pre-hospital services in road traffic injuries in Tehran: the viewpoint of service providers. *Int J Community Based Nurs Midwifery* 2015;3:272.
21. Haghparast-Bidgoli H, Hasselberg M, Khankeh H, Khorasani-Zavareh D, Johansson E. Barriers and facilitators to provide effective pre-hospital trauma care for road traffic injury victims in Iran: a grounded theory approach. *BMC Emerg Med* 2010;10:1.
22. Khorasani-Zavareh D, Khankeh HR, Mohammadi R, et al. Post-crash management of road traffic injury victims in Iran. Stakeholders' views on current barriers and potential facilitators. *ibid.* 2009;9:8.
23. Khankeh HR, Khorasani-Zavareh D, Masoumi G. Why the prominent improvement in prehospital medical response in Iran couldn't decrease the number of death related road traffic injuries. *J Trauma Treat* 2012;e103.
24. Rodgers BL. Philosophical foundations of concept development. *Concept development in nursing*. 2nd edn. Philadelphia: Saunders 2000;7-37.
25. Allgood MR. *Nursing theory: utilization & application*: Elsevier Health Sciences; 2013.
26. Schwartz-Barcott D. An expansion and elaboration of the hybrid model of concept development. In: *Concept Development in Nursing Foundations, Techniques, and Applications* 2000;129-59.
27. Broome M, Rodgers B, Knafel K. Integrative literature reviews for the development of concepts. *ibid.* 2000.
28. York Cornwell E, Currit A. Racial and social disparities in bystander support during medical emergencies on US Streets. *Am J Public Health* 2016;106:1049-51.
29. Pallavisarji U, Gururaj G, Girish RN. Practice and perception of first aid among lay first responders in a southern district of India. *Arch Trauma Res* 2013;1:155-60.
30. Fawcett J. *Concept development in nursing: foundations, techniques, and applications*. *Nurs Res* 1994;43:186.
31. Latane B, Rodin J. A lady in distress: inhibiting effects of friends and strangers on bystander intervention. *J Exp Soc Psychol* 1969;5:189-202.
32. Pourshaikhian M, Khorasani-Zavareh D, Gorji HA, Aryankhesal A, Barati A. Workplace violence process against emergency medical services staffs: a grounded theory. *Glob J Health Sci* 2016;8:213.
33. Fischer P, Krueger JI, Greitemeyer T, et al. The bystander-effect: a meta-analytic review on bystander intervention in dangerous and non-dangerous emergencies. *Psychol Bull* 2011;137:517.
34. Dovidio JF, Piliavin JA, Gaertner SL, Schroeder DA, Clark III RD. The arousal: Cost-reward model and the process of intervention: a review of the evidence. 1991. In: Clark MS, editor. *Review of personality and social psychology*. Vol. 12. Prosocial behavior. Sage Publications, Inc.
35. Levine M, Prosser A, Evans D, Reicher S. Identity and emergency intervention: how social group membership and inclusiveness of group boundaries shape helping behavior. *Pers Soc Psychol Bull* 2005;31:443-53.
36. Lepper MR, Greene D. *The hidden costs of reward: new perspectives on the psychology of human motivation*: Psychology Press; 2015.

References (continued)

37. Bickman L. The effect of another bystander's ability to help on bystander intervention in an emergency. *J Exp Soc Psychol* 1971;7:367-79.
38. Batson CD, Ahmad N, Lishner DA, Tsang J. Empathy and altruism. In: *Oxford handbook of hypo-egoic phenomena: theory and research on the quiet ego*. Brown KW, Leary MR, editors. 2016;161-74.
39. Batson CD, Lishner DA, Stocks EL. The empathy-altruism hypothesis. In: *The Oxford handbook of prosocial behavior* 2015;259-68.
40. Persson BN, Kajonius PJ. Empathy and universal values explicated by the empathy-altruism hypothesis. *J Soc Psychol* 2016;156:610-9.