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# Implication of Behavioural Change Theories in Occupational Health and Safety : A Systematic Review

Uraiwan Sirithammaphan*, Jammaree Sornbutt, and Kwanjit Pongrattanamarn

Sirindhorn College of Public Health, Yala, Faculty of Public Health and Allied Health Sciences, Praboromarajchanok Institute, Thailand

## Abstract

**Background**: Occupational health behaviour is a critical factor that influences work-related health problems and injuries. Thus, it is increasingly important that health providers incorporate understanding of the complexity of behaviour change into programmes designed to encourage and promote healthy behaviour among workers. **Objective:** The objective of this systematic review is to explore the uses of behavioural change theories in relevant studies regarding occupational health and safety and suggests applications to facilitate altering problem behaviours. **Method:** A search strategy was utilised the PICO model together with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). **Results:** After the screening process based on inclusion and exclusion criteria, finally,18 studies were selected as the study selection. The theory of reasoned action (TRA) is commonly applied in occupational health research to investigate, explain, or predict individual intentions toward safety behaviours in a variety of different workplaces, while the theory of planned behaviour (TPB) was applied to investigate, explain, or predict individual intentions as well as perception of behavioural control toward occupational safety and health or to alter and improve different health behaviours in various kinds of workers. The transtheoretical model (TTM) is especially useful in developing programme or intervention. And finally, the health belief model (HBM) is useful for exploring perceived susceptibility, severity, benefits, barriers and self-efficacy, including cues to action towards self-protective behaviour. **Conclusions:** Health providers could apply these behavioural models in assisting employees to increase health promoting behaviours and, at the same time, conduct preventive interventions to minimise occupational injuries as well as work-related health problems.

**Keywords**: Behavioural Change Theories, Occupational Health and Safety

***Corresponding author***: Uraiwan Sirithammaphan E-mail: noree90@hotmail.com

## Introduction

The principal missions of occupational health and safety aside from promoting workers' health are reducing their possibilities of, or preventing the workers from, experiencing work-related health problems as well as accidents and injuries (Suddin, Ani, Ismail, & Ibrahim, 2015). Consequently, studying in the field of occupational health and safety, especially worksite health promotion and disease prevention, touches on fundamental aspects of daily routine of working life (Pescud et al., 2015). Occupational health behaviour is a critical factor that influences work-related health problems and injuries (Moradhaseli, Ataei, van den Broucke, & Karimi, 2021). Thus, it is increasingly important that health providers incorporate understanding of the complexity of behaviour change into programmes designed to encourage and promote healthy behaviour among workers (O'Connell et al., 2015)

Behavioural change theories used in occupational health and safety are among the earliest theories of work health-related behaviours that remain the most widely used in current studies, comprised the Theory of Reasoned Action (TRA) (Ajzen, I., & Fishbein, 1980; Fishbein & Ajzen, 1975), Theory of Planned Behaviour (TPB) (Ajzen, 1985, 1991), the Health Belief Model (HBM) (Janz & Becker, 1984; Rosenstock, Strecher, & Becker, 1988), and the Transtheoretical Model's (TTM) (Prochaska & DiClemente, 1983).

This article aims to systematically review the uses of behavioural change theories, i.e., TRA, TPB, HBM, and TTM, in relevant studies regarding occupational health and safety and suggests applications to facilitate altering problem behaviours. oviders could apply these behavioural models in assisting employees to increase health promoting behaviours and, at the same time, conduct preventive interventions to minimise occupational injuries as well as work-related health problems.

## Methodology

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was undertaken to the literature retrieval strategy, evaluation method, data extraction, and result evaluation. The PRISMA statement consists of a four-phase flow diagram and a 27-item checklist comprised 1) searching relevant studies from databases, 2) screening based on inclusion and exclusion criteria, 3) coding of Studies, and 4) analysis and identify levels of evidence (Moher, Liberati, Tetzlaff, & Altman, 2009).

### Searching relevant studies from databases

*Literature review search strategy*

A search of the relevant literature was undertaken using the following electronic databases: Cumulative Index to Medical Literature Analysis and Retrieval System Online (MEDLINE), Nursing and Allied Health Literature (CINAHL), Academic search premier, PsycINFO including Multidisciplinary databases, such as, Scopus and Web of Science.

*Applying PICO framework as a method of search strategy*

The PICO model or framework (Richardson, 1995), a method of search strategy applied to search for all possible combinations of search terms, was adopted because PICO framework is seen as successful search strategy which is usually highly structured (Glanville et al., 2006). The acronym PICO stands for P=Population, I=Intervention, C=Comparison and O=Outcome. The key words used to search the literature in this present study were underpinned by the PICO model (Richardson et al., 1995).

**Screening based on inclusion and exclusion criteria**

The second phase of the research selection process consists of examining each of the selected articles and excluding articles that meet the following exclusion criteria. In this study, inclusion criteria consisted of:

1. The details of relevant studies have the keywords specified by the study questions and the resources are only peer-reviewed journal or articles and presented in full text.
2. The relevant studies of the last ten years from 2011 to 2021 are included.
3. The relevant studies presented in the English and Thai language are only accepted.

And exclusion criteria comprised:

1. The details of literature are not relevant to the keywords specified by the study questions or the resources are presented in abstract.
2. Studies published before the year 2011 are excluded.
3. Other languages than English and Thai are excluded due to the potential risk of the misunderstanding from translations.

**Coding of Studies**

Each of the selected studies was analysed using the evaluation form described in table 1 according to the following characteristics: Author's name, and year published, methodology, theory(ies), application, as well as levels of evidence.

**Analysis strategy and levels of evidence**

Levels of evidence were identified based on Joanna Briggs Institute (JBI) (The Joanna Briggs Institute, 2014)

## Results

**Study selection**

After searching the original database returned, the findings revealed as below diagram.

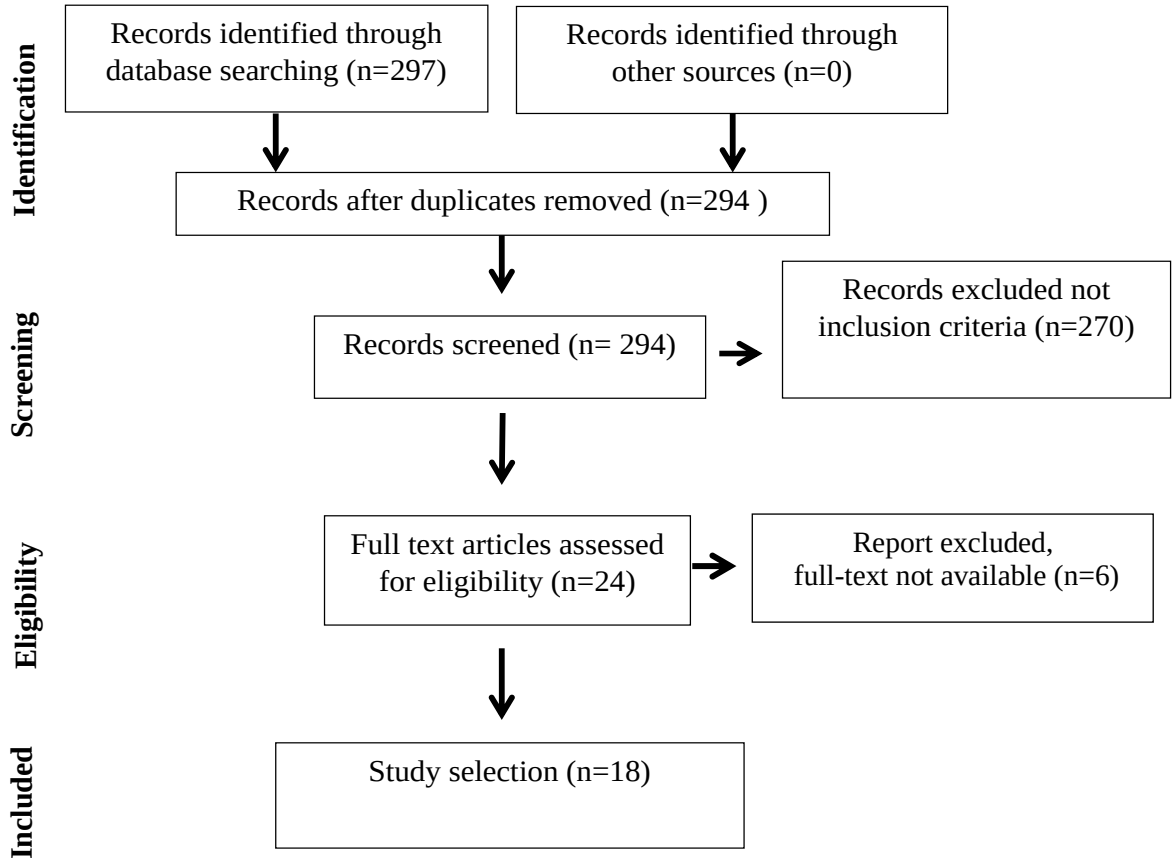


**Figure 1** Study selection flow diagram

Figure 1 shows the flow chart for selecting the included studies. After searching the original database through Medical Literature Analysis and Retrieval System Online (MEDLINE), Nursing and Allied Health Literature (CINAHL), Academic search premier, PsycINFO including Multidisciplinary databases, such as, Scopus and Web of Science, 297 studies were records. After deleting duplicates, the researchers then screened the summaries and excluded studies that did not address behavioural change theories in occupational health. Finally, 18 studies were selected as the study selection.

**Study Characteristics and Quality Assessment**

After the screening process based on inclusion and exclusion criteria, the 18 included studies were analysed. Overall and study-level quality assessments were summarised based on Joanna Briggs Institute (JBI) presented as table 1.

**Table 1** Overall and study-level quality assessments

| Author(s) | Year of publication | Methodology | Theory(ies) | Application | Levels of evidence |
|---|---|---|---|---|---|
| Abdollahzadeh et al | 2021 | A cross-sectional study | HBM | To adopt the concepts of HBM as theoretical framework in predicting workers' intention to use | Level 4.b |

| Author(s) | Year of publication | Methodology | Theory(ies) | Application | Levels of evidence |
|---|---|---|---|---|---|
| | | | | a personal protective equipment (PPE) | |
| Ginandhani et al | 2021 | A cross-sectional study | HBM | To determine factors that have a direct and indirect effect on the use of PPE | Level 4.b |
| Goh et al | 2018 | A cross-sectional study | TRA | To develop a survey instrument for examining factors influencing unsafe behaviours | Level 4.b |
| Gultekin and Kitis | 2019 | A cross-sectional study | HBM | To develop an instrument for assessing lead exposure | Level 4.b |
| Gupta et al | 2021 | A cross-sectional study | HBM | To examine factors underpinning workers' decisions to implement prevention and control measures | Level 4.b |
| Hinsz and Nickell | 2015 | A cross-sectional study | TRA and TPB | To develop a survey instrument for examining factors that contribute to the production of safe food | Level 4.b |
| Jafaralilou et al | 2019 | A controlled quasi-experimental study | TPB | to measure the impact of the TPB-based educational intervention on promoting helmet use among workers | Level 2.c |
| Kuchi et al | 2016 | A semi-experimental study | TPB | To adopt the concepts of intention and behavioral control for prediction of behaviour change | Level 4.b |
| Lopes et al | 2019 | A case study | TPB, An extended model of TPB | To develop an instrument for assessing industrial worker behaviour | Level 4.d |
| Moazzami et al | 2016 | A quasi-randomised trial (pseudo-randomisation) | TTM | To consider effect of an ergonomics-based educational intervention | Level 1.d |
| Moradhaseli et al | 2021 | A cross-sectional study | HBM | to explore the factors influencing workers' occupational health behaviour | Level 4.b |
| Nasir et al | 2020 | A cross-sectional study | HBM | To develop a survey instrument for assessing COVID-19 related perceptions and possible disparities between workers | Level 4.b |

| Author(s) | Year of publication | Methodology | Theory(ies) | Application | Levels of evidence |
|---|---|---|---|---|---|
| O'Connell et al | 2015 | A randomised controlled trial (RCT) | TPB | To develop a psychosocial measure for identifying behavioural self-efficacy | Level 1.c |
| Rezaei et al | 2019 | A cross-sectional study | TPB | To investigate the factors affecting workers' intention in using PPE | Level 4.b |
| Sanaeinasab et al | 2018 | A randomised controlled trial (RCT) | TTM | To determine the effect of a TTM-based educational programme on work-related ergonomic posture | Level 1.c |
| Siponen et al | 2014 | A cross-sectional study | TRA | To adopt the concepts of intention and actual behaviour as theoretical framework | Level 4.b |
| Wright et al | 2019 | A cross-sectional study | HBM | To determine wastewater worker's beliefs and practices on wearing PPE | Level 4.b |
| Zeidi et al | 2011 | A prospective randomised controlled trial. | TTM | To examine the effectiveness of ergonomic training on postural habits | Level 1.c |

According to characteristics of the selected studies, the 18 studies were published from 2011 to 2021 with most done in Asia. Most of which were undertaken as a cross-sectional study. A various type of samples' occupations in the relevant studies included mine workers(Gultekin & Kitis, 2019), dental health personnel (Nasir, Elhag, & Almahdi, 2020), farmers (Abdollahzadeh & Sharifzadeh, 2021; Rezaei, Seidi, Science, & 2019), workers at a poultry producing facility(Hinsz, las, & 2015), construction workers (Goh, Ubeynarayana, Wong, & Guo, 2018; Jafaralilou, Zareban, Hajaghazadeh, Matin, & Didarloo, 2019), university staff (O'Connell et al., 2015), and industrial workers (Lopes, Kalid, Rodríguez, & Ávila Filho, 2019).

## The uses of behavioural change theories in occupational health and Safety

*Domain 1: The uses of theory of reasoned action (TRA) in occupational health and Safety*

The theory of reasoned action (TRA) was first introduced in 1967 by Martin Fishbein, and then was extendedly developed by Fishbein and Icek Ajzen in the year 1975 and 1980 (Fishbein & Ajzen, 1975). The TRA is a behavioural theory with emphasis on behavioural and normative beliefs, attitudes, subjective norms, intentions, and behaviour sequence or series directed to a specific focus (M. Fishbein, 1980). A definitive element of the model is regarded as an individual intention to engage in a certain behaviour that is examined as the best predictor of subsequent behaviour — whether or not a person actually perform in that behaviour. Behaviour Intentions, in turn, could be predicted by attitudes and subjective norms. This means that the more positively an individual regards a certain action or behaviour and the more they perceive the behaviour as being crucial to others, such as

peers, family, or society, the more likely they are to form intentions to engage in that behaviour. Attitude is based on a set of outcome beliefs regarding the consequences of behaviour, i.e., how positive or negative each outcome is and how likely it is to occur. A perceived subjective norm is based on normative beliefs — the acceptance and evaluation of behaviours by other people (Fishbein & Ajzen, 1975)

Thus far, only three studies regarding the use of TRA in occupational health studies were selected according to the study selection processes. The TRA has been commonly applied in occupational health research to investigate, explain, or predict individual intentions toward safety behaviours in a variety of organisational settings, for instance, examining factors contributing the intentions of food processing workers to engage in food safety behaviours (Hinsz et al., 2015), determining intentions and the other cognitive factors within the TRA of workers in a tunnel construction project to perform behaviour-based safety (BBS) (Goh et al., 2018), and intentions of employees in Finland to comply with information security policies (Siponen, Adam Mahmood, & Pahnila, 2014). The relevant studies concluded that the reasoned action variables of TRA were all predictive of safety behaviours of food processing workers, and food safety intentions and behaviours of these participants were best predicted by the reasoned action approach (Goh et al., 2018; Hinsz et al., 2015). Intention and social norms were proved to be the biggest influence on work safety behaviours (Goh et al., 2018). Also, intention and social norms had a significant and positive effect on the employees' intention to comply with information and policies of their workplace (Siponen et al., 2014).

Furthermore, the TRA was also applied to predict a strong association of individual behaviour together with belief concerning the self-efficacy of procedures to assure safety (Didarloo et al., 2012; Leiter, Zanaletti, & Argentero, 2009; Siponen et al., 2014). Thus, the TRA could be applied as psycho-social measures to identify behavioural self-efficacy (O'Connell et al., 2015).

*Domain 2: The uses of theory of planned behaviour (TPB) in occupational health and Safety*

The theory of Planned Behaviour (TPB) (Ajzen, 1985, 1991), an extended theory of the TRA, included perceived behavioural control as an additional construct is assumed that behavioural intention determines behaviour directly and indicates that attitudes toward a behaviour, subjective norms, and perceived behavioural control (PBC) influence an individual's intention. The difference between the TRA and its companion, the TPB, is that the TPB allows for perceived control – as an additional component of intentions and behaviour – to affect behaviour directly, regardless of the behavioural intention.

For the above reasons, the TPB has been well-known and widely applied theoretical framework for describing and predicting individual behaviour (Ajzen, 1985, 1991). In occupational health and safety, the TPB was applied in this research area than the TRA. This is because the TPB was proposed to eliminate the limitations of the original TRA model in dealing with individual behaviour by including perceived behavioural control. Consequently, many relevant studies concluded that TPB has higher predictive power than TRA (Guo et al., 2007).

Most relevant studies applied TPB as theoretical framework by using the four subscales of the model – attitude, subjective norms, perceived behavioural control, and intention – to measure the outcomes of the TPB-based educational intervention or to investigate, explain, or predict individual intentions, as well as perception of behavioural control toward occupational safety and health or to alter and improve different health behaviours in various kinds of workers (Jafaralilou et al., 2019), e.g., applying TPB to assess the effect of a training intervention on helmet use of cement factory workers (Jafaralilou et al., 2019), to seek the

appropriate method of manual material handling among workers working in mining and metal Industries (Kuchi, Zare, & Aghamolaei, 2016), and to examine factors contributing the intentions of food processing workers to engage in food safety behaviours (Hinsz et al., 2015).

A variety of relevant studies indicated that the TPB was applied as an instrument for assessing or improving individual work-related behaviours. O'Connell et al. (2015), for instance, applied the concepts of TPB to develop a psychosocial measures for identifying behavioural self-efficacy to reduce workplace sitting time of NHS staff (O'Connell et al., 2015). Lopes et al. (2019) adopted the TPB constructs to develop an instrument for investigating the factors affecting workers' intention in using personal protective equipment (PPE), and to assess work behaviours regarding energy saving of industrial workers (Lopes, Kalid, Rodríguez, & Ávila Filho, 2019).

TPB is the foundation of the later framework, the extended theory of planned behaviour (TPB). The extended TPB is included an or some additional construct(s) depending on the relevant objectives and specific context of each study, for instance, adding descriptive norm and personal moral norm into the classic theory of planned behaviour to understand the determinants of energy saving behaviour of workers in their workplaces (Gao, Wang, Li, & Li, 2017), adding risk perception and moral norm to predict intention of farmers regarding safe use of chemical fertilisers (Savari & Gharechaee, 2020), or including knowledge and personal norm as additional variables to investigate factors associated with the construction waste reduction behaviour of contractor employees (Li, Zuo, Cai, & Zillante, 2018). The results of the relevant studies using the extended TPB explored that the extended TPB framework has significantly improved the explanation power of work behaviour than the original TPB model (Gao et al., 2017; Li et al., 2018).

Both TRA and TPB assume that the behavioural intention is the best predictor of a behaviour or, in another word, an intention to perform the behaviour is a determinant of that behaviour. Many studies regarding individual safety behaviours applied both TRA and TPB in order to explore relationships between attitude and risky behaviours as these two theories hypothesise that the influential effect from attitude to individual subsequent behaviour was mediated through intended behaviour (Ma, Yan, Huang, & Abdel-Aty, 2010).

*Domain 3: The uses of transtheoretical model (TTM) in occupational health and Safety*

The Transtheoretical Model (TTM), created by Prochaska and DiClemente, is a behavioural theory that illustrates behaviour change as occurring in five stages comprised: precontemplation, contemplation, preparation/determination, action/willpower, and maintenance (Prochaska & DiClemente, 1983). In the precontemplation stage, precontemplators are not seriously considered about changing their behaviour and do not seek any kind of help. People in this stage are less likely to change their behaviour than those in the other four stages. For contemplation stage, people are more aware of their negative behaviours affecting personal consequences. Even though contemplators are acknowledged and have the competence to consider the possibility of changing, they are prone to be ambivalent. For the stage of preparation/determination, people are ready for change by making a commitment to make a change. In action/willpower stage, people are actively engaged in taking steps to change their negative behaviours as they believe in their ability to change the behaviours by applying a variety of different methods. The last stage of change is maintenance, people in this stage are able to successfully maintain their positive behaviours and are aware of progression they have made (Prochaska & DiClemente, 1983; Prochaska, DiClemente, & Norcross, 1992). The concepts of the TTM could be especially useful in developing programme planning, curriculum development, and programme evaluation or

intervention to promote health or improve individual health behaviour (F. et al., 2017; Keshmiri et al., 2017; Leandro-França, van Solinge, Henkens, & Murta, 2016)

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In occupational health studies, TTM was applied as an effective health educational instrument or in the form of occupational health promoting programme for promoting health in a workplace (Moazzami, Dehdari, Taghdisi, & Soltanian, 2015). Most educational programmes or interventions based on TTM developed were associated with safer work habits or promoting healthy lifestyles in a variety of workplaces, particularly applying TTM to improve ergonomic postures or postural habits of workers. The three included studies revealed that their intervention groups receiving a TTM-based intervention had a significant improvement in ergonomic postures ($P < 0.05$) after finishing educational programme in comparison with before intervention. Their results could be concluded that TTM-based ergonomic programme was effective in improving ergonomic posture to prevent postural risk factors for musculoskeletal disorders (MSDs). Furthermore, individual guidance based on the TTM were effective in promoting long-term continuation of positive work habits or preventing work-related diseases. (Moazzami et al., 2015; Sanaeinasab et al., 2018; Zeidi, Morshedi, & Zeidi, 2011).

*Domain 4: The uses of health belief model (HBM) in occupational health and safety*

The original version of HBM was basically established as a systematic method in the early 1950s, at which time several social psychologists sought to understand the widespread failure or the infrequent acceptance of people being charged little or nothing for the health service to participate in health promotion programmes (Janz & Becker, 1984). Thus, the original objective of the HBM developers was to focus on understanding why people do not take personal protective equipment (PPE) to prevent themselves from health threats (Orji, Vassileva, & Mandryk, 2012). The six major components of the HBM comprised; perceived susceptibility, severity, benefits, barriers and self-efficacy, including cues to action. These six main constructs of HBM influence preventive health behaviours (Rosenstock et al., 1988).

Aside from some deliberation of HBM components, this behaviour change model is closely fit the determinants identified for personal protective equipment (PPE) (Abdollahzadeh & Sharifzadeh, 2021; Ginandhani, Kurniasih, & Rachman, 2021; Gupta, Fournié, Hoque, & Henning, 2021; Wright et al., 2019), the HBM does highlight some components that should be related to workplace self-protective behaviour, for instance, threat-related beliefs (hazard susceptibility and severity), self-efficacy, response efficacy (perceived benefit), and barrier (DeJoy, 1996). Consequently, the HBM was typically applied in studies regarding occupational health and safety to understand why people did or did not take preventive measures, such as mask, engage in a wide variety of preventive health behaviours (Abdollahzadeh & Sharifzadeh, 2021).

The HBM seems to be the most widely used theory in occupational health studies according to database searching. 7 out of 18 selected studies revealed that the HBM construct was applied as prevention and control measures to explore factors influencing workers' occupational health behaviours, particularly the uses of PPE (Abdollahzadeh & Sharifzadeh, 2021; Ginandhani et al., 2021). The relevant studies illustrated that perceived threats or risk perception, another word, as suggested by the theory of HBM, is one of the major component in understanding how workers become motivated to change their work-related behaviours (Nasir et al., 2020; Yousafzai, Siddiqui, & Janjua, 2013). A literature reviewed appears to suggest that perceived benefits particularly PPE effectiveness in reducing work exposure emerged as the strongest positive predictor (Abdollahzadeh & Sharifzadeh, 2021; Ginandhani et al., 2021; Gupta et al., 2021),

while perceived barriers emerged as the strongest negative predictor to enacting work-related behaviours (Abdollahzadeh & Sharifzadeh, 2021; Gupta et al., 2021; Nasir et al., 2020). Furthermore, the other variables mentioned in HBM such as fear, threat, or past experience is directly related to the health threat or risk perception of workers (Bishop, Baker, Boyle, & MacKinnon, 2015; Janz & Becker, 1984).

**Discussion**

Despite the fact that both TRA and TPB were commonly applied in occupational health research to investigate, explain, or predict individual intentions toward safety behaviours in a variety of different workplaces, the TPB was applied in this research area than the TRA. This is because the TPB was proposed to eliminate the limitations of the original TRA model in dealing with individual behaviour. The TPB was included perceived behavioural control, an additional construct, that allows for perceived control to affect behaviour directly, regardless of the behavioural intention. Consequently, many relevant studies concluded that the TPB has higher predictive power than the TRA. As Özer and Yilmaz (2011) illustrated, TPB has higher predictive power than TRA in predicting workers' intention to use information technology (Özer & Yilmaz, 2011). Consistent with the findings of Guo et al. (2007), despite the fact that both models are appropriated to predict smoking behaviours among Chinese student, the TPB had a significantly higher variance than TRA for predicting intention as well as smoking behaviours among adolescent (Guo et al., 2007). Sutton, McVey, & Glanz (1999), however, concluded that even though the TRA constructs were not the strongest predictors, TPB did not perform significantly better than the TRA. Also, the beliefs on which the study samples are based were potentially amenable to affect through educational-based programmes (Sutton, McVey, & Glanz, 1999).

According to the TTM, the stages of change from TTM illustrate individual intention and engagement to perform a targeted health-related behaviour. Consequently, this model is especially useful in developing programme or intervention. In occupational health studies, TTM was applied as an effective health educational instrument or in the form of occupational health promoting programme for promoting health in a workplace as the TTM-based interventions are effective in promoting behaviour change of the target population (Moazzami et al., 2015). Consistent with the conclusions of Moeini et al. (2010) and Zare et al. (2016), the educational programme based on the TTM had a statistically significant relationship with the whole TTM processes. Also, the experimental group had a significant positive progress after finishing educational programme in comparison with before intervention (Moeini, Rahimi, & Hazaveie, 2010; Zare, Aghamolaei, Zare, & Ghanbarnejad, 2016).

The HBM seems to be the most widely used theory in occupational health studies according to database searching. The model is useful for exploring perceived susceptibility, severity, benefits, barriers and self-efficacy, including cues to action towards self-protective behaviour (Abdollahzadeh & Sharifzadeh, 2021). This systematic review illustrated that, aside from some deliberation of HBM components, this behaviour change model is closely fit the determinants identified for personal protective equipment (PPE) (Abdollahzadeh & Sharifzadeh, 2021; Ginandhani et al., 2021; Gupta et al., 2021; Wright et al., 2019). As wall (2009) concluded that the results were particularly noteworthy that factors identified with the implication of PPE closely matched the construct of HBM (Wall, 2009). Consistent with the conclusion of DeJoy (1996), the HBM theory is the only one framework specifically developed to illustrate preventive health behaviour and this behaviour change model is closely fit the determinants identified for using in the field of occupational health, especially self-protective behaviour (DeJoy, 1996).

## Conclusion

Application of the behavioural change theory, as a theoretical framework, in the field of occupational health and safety was valuable as all theories are useful for investigating antecedents of work-related health behaviours. Researchers could properly apply these behavioural change theories to design, test, or report studies or interventions. The TRA is commonly applied in occupational health research to investigate, explain, or predict individual intentions toward safety behaviours in a variety of different workplaces, while the TPB was applied to investigate, explain, or predict individual intentions as well as perception of behavioural control toward occupational safety and health or to alter and improve different health behaviours in various kinds of workers. If researchers plan to conduct intervention to improve health among workers, the TTM seems to be the most appropriated framework. And finally, the HBM is useful for exploring perceived susceptibility, severity, benefits, barriers and self-efficacy, including cues to action towards self-protective behaviour.

## Suggestions for the further study

Due to the scarcity of literature related to the experimental studies such as randomised controlled trial (RCT), participatory action research (PAR), and qualitative studies, there should be more RCT, PAR, and qualitative work in occupational health using behavioural change theories as these methods are considered valuable for the future research.

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