Food hygiene training: Introducing the Food Hygiene Training Model

Phillip Seaman *

17 Gillian Close, Aldershot, Hampshire GU12 4HU, UK

A R T I C L E   I N F O

Article history:
Received 12 April 2009
Received in revised form 9 August 2009
Accepted 17 August 2009

Keywords:
Hygiene
Training
Food safety
Health education

A B S T R A C T

For many years social cognition models and workplace health education theories have been used to map out the variables and identify determinants of various health-related behaviours, including hand hygiene practice, food handling and the use of food thermometers. Whilst many models and theoretical frameworks identify specific determinants or variables of behaviour and organisational interactions this paper takes a holistic approach to food hygiene training and proposes a new theoretical framework. This framework (The Food Hygiene Training Model) encompasses and utilises various theoretical models and educational theories to recognise the various influences on the training, beliefs, motivations, and conditions required for food handlers to perform safe food handling practices in the workplace. Effective food hygiene training and the enactment of safe food handling practices learnt during training are critical elements in the control of food-borne illnesses throughout the world. Therefore, future food hygiene training strategies, if they are to be effective, should consider the adoption of the Food Hygiene Training Model, to aide overall improvements in food businesses, and thus, an overall reduction of food-borne illnesses.

© 2009 Elsevier Ltd. All rights reserved.

1. Introduction

For many years, based on associations between poor hygiene practices in food premises and low levels of staff food hygiene training (Audit Commission, 1990), the UK food industry, particularly Small – Medium sized Enterprises (SME's) have relied on
formal nationally accredited/basic or foundation level food hygiene courses to provide the knowledge food handlers need to make safe and informed decisions about food safety. Despite an increase in the number of food handlers receiving such training, a high proportion of food poisoning outbreaks still occur in commercial catering settings as a result of poor food handling practices (Clayton, Griffith, Price, & Peters, 2002).

The enactment of safe food handling practices, learnt during food hygiene training, requires the food handler to use the resources available to them and implement the knowledge and skills into practical application, unfortunately, in most cases, food hygiene training does not translate into positive food handling behaviours (Clayton et al., 2002; Green et al., 2005; Powell, Attwell, & Massey, 1997; Riben, Mathias, Campbell, & Wiens, 1994) or any behavioural changes which are noticed in the workplace are ephemeral (Seaman & Eves, 2008). Although many reports (Little, Lock, Barnes, & Mitchell, 2003; Rennie, 1994; Worsfold, Griffith, & Worsfold, 2004) indicate the failure of formal courses to generate improvements in food handling practices, investigators almost invariably concluded that food hygiene education programmes should be encouraged. The reasons for the continued use of formal food hygiene education courses are usually concerned with the presentation of a good public image between the enforcement agencies and the personnel in the food industry.

Whilst a plethora of studies exist (i.e., Axtell, Maitlis, & Yearta, 1997; Clayton et al., 2002; Mathieu, Tannenbaum, & Salas, 1992; Rennie, 1995; Seaman & Eves, 2006) that highlight many other social, personal and environmental factors that might influence the food handlers behaviour, thus the enactment of learnt food safety practices, there is not one complete framework which considers all these factors, and outlines when and how the training should be evaluated to ensure a long term acceptance of newly learnt food handling behaviours.

Ehiri, Morris, and McEwen (1997) stated that the effectiveness of food hygiene training could be greatly improved where training is based on a suitable constellation of approaches designed in-line with effective health education theories and models. Such models could contribute to the development of approaches which consider not only the provision of information aimed at modifying attitudes and behaviours, but also the social and environmental factors which impinge on food safety. Therefore, a systematic review of the literature pertaining to social cognition models applied to food hygiene education and workplace health education theories was conducted in order to assist the development a complete theoretical framework for effective food hygiene training and its evaluation. From this review an alternative theoretical model is proposed.

This paper presents the Food Hygiene Training Model as a conceptual framework for the effective implementation and monitoring of food hygiene training programmes, thus contributing to overall hygiene standards, and a reduction of food-borne illness throughout the world, but particularly in the UK, where it is estimated that between 2.1 and 3.5 million English and Welsh citizens are affected by episodes of food-borne disease and food related illnesses annually (Redmond & Griffith, 2002).

2. Workplace health promotion

In a study on the planning and implementation of workplace health promotion, Bertera (1990) identified the need for examination of service provision and programme evaluation to help ensure credibility and relevance. Three out of the four issues specifically identified are pertinent to food hygiene education, and these are:

1. Incentives for both managers and employees to look at long term as well as short term health effects.
2. The recording of outcomes in a systematic and reliable way to inform future planning.
3. Integration of health promotion with other workplace benefits rather than focusing only on professionally related topics.

Tones, Tilford, and Robinson (1990) identified that workplace promotion tends to focus on the individual and not on community or social structures. In the case of food handling activities, where long-term positive behaviours are required, it is necessary to include reinforcing messages and some techniques to encourage continuous participation. Skinner's (1953) operant conditioning theory identified that positively reinforced or rewarded behaviour will generally be continued and may increase in frequency. Although this theory has been succeeded by more recent theories it still has some basis for explaining certain behavioural scenarios. Whitehead (2001) stated that the strength of social cognitive theory lies in its ability to highlight an individual's reasons for considering and possibly adopting any health-related behavioural change, including for example, their belief, knowledge, attitude, value, drive, motivation and self-efficacy systems. Therefore, successful workplace food hygiene training should be based on firm theories that take into account personal development and communication of messages, as well as a settings approach to food hygiene promotion, focusing on the entire range of variables that influence their behaviour. DeAmicis (1997) and Whitehead (2001b) both suggested that any education intervention is far more likely to have a successful outcome if the reasons why a client may or may not adopt a particular health-related behaviour are understood before embarking on a programme of change. Seaman and Eves (2006) stated that further investigation into the motivational factors and beliefs of the food handler into food hygiene training, its role in their working environment, and its effectiveness were needed to fully appreciate all the factors which affected the food handlers' enactment of safe food handling practices.

3. Social cognition models

Whilst many social cognition models exist in the field of health evaluations and behavioural predictions, including The Health Belief Model (Becker, 1974), The Health Action Model (Tones, 1977; Tones, 1987), The Theory of Reasoned Action Model (Ajzen & Fishbein, 1980), and The Theory of Planned Behaviour (Ajzen, 1991) there are subtle differences which make certain models more suitable than others in identify the determinants of various related behaviours and predicting behavioural enactment. Whilst it is beyond the scope of this review to individually critique these models, many researchers (i.e., Clayton & Griffith, 2008; Conner & Armitage, 1998; O'Boyle et al., 2001; Seaman & Eves, 2006) advocate extensions to these models to further understand the processes by which cognitive factors determine specific social behaviours, in an attempt to modify such behaviours so that the desired behaviours are predicted and performed.

Therefore, serious consideration needs to be given to a model or framework that encompasses both workplace health education theories and social cognition modelling to predict and evaluate desired safe food handling behaviours.

3.1. The Tones' Health Action Model

The Tones' Health Action Model synthesises two other widely tested models, the Health Belief Model and the Theory of Reasoned Action (Rennie, 1995). The Theory of Reasoned Action provides a framework that links individual beliefs, attitudes, intentions and behaviour (Fishbein, Middlestadt, & Hitchcock, 1994). Norms are
considered to be fundamental to all behaviour and distinctions are made both between attitudes and beliefs, and between behavioural intentions and resultant actions. Beliefs and attitudes may interact to produce a behavioural intention. The intention then leads to an advocated action when appropriate social and environmental conditions prevail (Rennie, 1995). Griffith, Mathias, and Price (1994, p. 16) wrote: “People’s actions may be affected by beliefs about what is normal and acceptable behaviour and by the extent to which they feel they can control their own health (locus of control)”. The application of Tones’ Health Action Model to Food Hygiene Education is illustrated in Fig. 1. Most of the recognised influencing factors are incorporated – the knowledge about food hygiene obtained from a food hygiene course; the influence of norms, which could be altered by the provision of support for changes in food handling practices from management and colleagues in the food industry; some incentive to change behaviour, e.g., perhaps improved job satisfaction or financial inducements; the facilitating effects of a workplace that provides a suitable range of equipment and facilities; and the development of personal skills to apply the knowledge gained from a course (Rennie, 1995). In light of the benefits gained from the synthesis of two widely tested models (i.e., HBM and TRA) and the inclusion of the recognised factors which affect food handling behaviours, the Health Action Model applied to food hygiene education (Fig. 1) is considered a worthy framework from which to work and will be included in the review. However, the Theory of Reasoned Action is not without its limitations (Ajzen, 1991) and to take account of such limitations, whether real or perceived, Ajzen (1985), Ajzen (1988, Ajzen (1991) added a third element to the original Ajzen and Fishbein model – the concept of Perceived Behavioural Control (Godin & Kok, 1996).

Perceived Behavioural Control (PBC) reflects personal beliefs as to how easy or difficult performing the behaviour is likely to be (Ajzen, 1991). PBC therefore acts as both a proxy measure of actual control and a measure of confidence in one’s own ability (Armitage & Conner, 2000). It is assumed to reflect external factors (e.g., availability of time, money, or social support) as well as internal factors (e.g., ability, skill, information) (Ajzen & Timko, 1986). The inclusion of PBC as a predictor of behaviour is based on the rationale that: holding intention constant, greater perceived control increases the likelihood that enactment of the behaviour will be successful (Armitage & Conner, 2000). Further, to the extent that perceived control reflects actual control, PBC will directly influence behaviour (Armitage & Conner, 2000). The TRA with the addition of the Perceived Behavioural Control element is known as the Theory of Planned Behaviour.

4. Predicting the long term transfer of training

Clearly the success with which individuals apply new skills in the workplace is of importance both to those attending training programmes and to employing organisations who continue to invest heavily in such development activities (Axtell et al., 1997). Baldwin and Ford (1988) noted that there is a lack of theory guiding research into the transfer of training. The few studies, which do examine the application of trained skills to the job, tend to consider immediate transfer, rather than examining it over a longer period.

Fig. 1. Tones’ Health Action Model Applied to Food Hygiene Education.
time frame (Tracey & Tews, 1995). In response, Axtell et al. (1997) used a model, developed from a framework by Baldwin and Ford (1988), to test the hypothesis that transfer a year on is expected to relate to transfer after 1 month, due to suggestions that the immediate period on the job after training is critical to longer term transfer (Baldwin & Ford, 1988; Gist, Bavetta, & Stevens, 1990; Noe, 1986). The transfer of training framework contains three types of influences on transfer: Course characteristics, Trainee characteristics, and features of the work environment, i.e., Environmental factors (Axtell et al., 1997). Axtell et al. (1997) looked at one of six training courses aimed at developing interpersonal skills at work. They found that if new skills are to be transferred to the workplace, trainees' first need to feel that the course is relevant to their jobs, and must also be committed to using what they have learned. The importance of these variables was consistent with findings in previous research (Goldstein, 1986; Mathieu et al., 1992). After one year the most important factors influencing trainees' self-rated transfer appeared to be the amount they believe they have transferred after 1 month, the degree of autonomy in their jobs, and their original motivation to use what they had learned. Thus, the key predictors to transfer after one year were slightly different from those after 1 month (Axtell et al., 1997), but the trainees' self-rated transfer of training at 1 month was a significant predictor of trainee-rated transfer after one year. As in other studies (Baldwin & Ford, 1988; Noe, 1986), the results imply that the period immediately after the course may be critical in laying foundations for future skill use (Axtell et al., 1997).

5. The effectiveness of the training intervention

Evaluations of any food hygiene training initiative are required to attribute value to the intervention. The Health Education Authority (HEA (Health Education Authority), 1996) indicated that a well-planned evaluation with easily measured outcome criteria is considered to be an integral part of any intervention. Data representing intervention effectiveness are known to be ‘outcome measurements’ (Redmond & Griffith, 2006). Kirkpatrick (1967) suggests four primary outcome measurements for evaluating the effectiveness of any formal training or informal training programme to determine whether the desired outcomes of training (i.e., the implementation of safe food handling behaviours) have been achieved and established. These criteria are (1) reactions to training (trainees' affective responses to the training experience and their perceptions of its value); (2) knowledge acquisition (the extent to which trainees know more after training than before); (3) changes in job-related behaviour and performance that result from training; and (4) improvements in organisational level results, such as increased customer satisfaction, a cleaner environment, and greater profitability. However, many other authors (i.e., Gist, 1987; Holton, Bates, & Ruona, 2000; Holton, Bates, Seyler, & Carvalho, 1997; Krager, 2002; Roullier & Goldstein, 1993) propose a multitude of other components, such as Learner readiness, Motivation to transfer, Performance – Outcome expectations and Openness to change, which can also be used to measure, predict or evaluate specific aspects of training.

6. The proposed Food Hygiene Training Model

The proposed model – The Food Hygiene Training Model (Fig. 2) incorporates aspects of the Tones' Health Action Model Applied to Food Hygiene Education, and includes several additional components under three proposed headings: Evaluation stages, Managerial components and Overall performance measures to take into account both the effective planning of the training programme, the managerial support required to determine the correct type of training and the support needed to facilitate the training process, and the overall performance measures needed to ensure that training transfers into the desired safe food handling behaviours.

6.1. Evaluation stages

The first Evaluation stage: Documented TNA (Training Needs Analysis) provides an important permanent individual record of the capabilities of the food handler, their training needs, why they should be trained and when they should be trained, thus establishing a starting point from which the success or failure of food hygiene training programmes can be measured, and shows due diligence by the manager in assessing food safety risks. Billsborough (1999) recommends that records should be reviewed each year to enable management to determine the training needs of both individuals and the business as a whole. This will help ensure that food handlers are trained commensurate with their duties, especially if their duties or work practices have changed, and that any updating requirements are identified.

The second Evaluation stage: Knowledge test and/or practical skill assessment measures the knowledge retained by the food handler and/or their practical capabilities shortly after training. This evaluation stage should be conducted in a controlled and closely monitored environment to establish if knowledge or skills have been imparted correctly and assesses if the food handler is capable of comprehension of the subject and/or the practical application of learnt practices. Any deficiencies in skill or knowledge should be addressed at this stage and highlighted to the food handler so they can learn and adapt to ensure full compliance with the training provided. This is the second evaluation criteria as proposed by Kirkpatrick (1967).

The third Evaluation stage: Food handlers' evaluation of the training programme provides an indication of the food handlers' reactions to the training, thus the first evaluation criteria as suggested by Kirkpatrick (1967). Although many food handlers may find the content of food hygiene course beneficial and relevant to their needs, various authors (MacAuslan, 2001; Sprenger, 1999) and some Environmental Health Officers (Worsfold et al., 2004) have doubts over the content and assessment of hygiene courses provided by the national awarding bodies. Their main concerns focus on the level of the questions, their wording, the topic range and the lack of emphasis on key topics (Worsfold et al., 2004). The food handlers' reactions to the training programme could be measured through the use of a questionnaire encompassing both open and closed questions to measure the perceived value and relevance of the training programme to the food handlers responsibilities, thus allowing respondents the opportunity to portray approval or disapproval towards certain aspects of the training.

6.2. Overall performance measures

The Overall performance measures can be divided into the final two evaluation categories: the effect of food hygiene training on the individual food handler and the effect of food hygiene training on the organisation. Individual performances can be measured through observation or assessment in the workplace, under the supervision of an appropriately trained manager or supervisor. The food handler could be asked questions pertaining to food safety in their workplace, at a set time (i.e., 1 month) after initial food hygiene instruction, and results recorded to show how much the food handler has retained in relation to their training and food handling duties. Alternatively, observations of food handling practices could be carried out, again by an appropriately trained person, to measure practical competency. The effects of food hygiene training on the organisation can be measured through various means including: Environmental Health Inspection reports, staff and
customer satisfaction surveys, the nature and frequency of customer complaints, laboratory bacteriological test results, increased or decreased food wastage due to food spoilage or contamination and the type and frequency of food pest infestations.

The rationale for the additional Managerial Components is explored in further detail under the respective headings of Identification of Training Needs and Choice of the Training Programme.

6.3. Identification of Training Needs

According to Buckley and Caple (1990) training is a planned and systematic effort to modify or develop knowledge, skills and attitudes. In order to assess what type of modification or development is required and to establish a starting point from which the training programme can begin a TNA (Training Needs Analysis) should be conducted to assess current knowledge, skills and attitudes towards safe food handling behaviour. Obviously not all food handlers are the same and some have existing knowledge of food safety, from previous food handling experiences or media coverage. These food handlers may just require the opportunity to practice and demonstrate their skills in the workplace. Other food handlers may require relevant knowledge of the subject, and have no practical skills, thus require both theoretical and practical training. Some food handlers may be practically competent but lack the understanding of why they undertake certain practices, thus require theoretical training, and the final group of food handlers who have a negative attitude towards safe food handling practices may require incentives and motivational support to entice improvements in attitude. Therefore, the challenge for a manager of a food business is to provide food hygiene training relevant to the needs of the food handler. Traditional accredited food hygiene courses have set syllabi, and whilst the course can be adapted to specific industry sectors the food handlers may have to hear or read information which is not relevant to their needs, in order to pass the examination at the end of the training session. The training may therefore be perceived as a waste of time by the food handler. Alternative approaches to food hygiene training are available such as commissioned bespoke training, workplace training and some e-learning courses. Whichever the approach, appropriate managerial expertise is required to monitor, and evaluate the effectiveness of the programmes and to ensure learnt behaviours are adopted.

Previous research (MacAuslan, 2001; Mortlock, Peters, & Griffith, 2000; Worsfold et al., 2004) established that many people, such as Environmental Health Officers perceive accredited basic or foundation level food hygiene training as not being relevant for the whole food industry. By conducting a TNA many food industry managers may realise that most of their food handlers may not need to be trained with accredited training providers or be given formal examinations, but merely need to be given frequent refresher training by trained personnel, which could include feedback on observed practical activities or a short knowledge
questionnaire to test their understanding of the subject. If observations and the testing of food handlers are conducted by personnel within the organisation, businesses must ensure these personnel are kept abreast of food hygiene legislation and regularly review their own professional development needs.

6.4. Choice of Training Programme

Research conducted by Ram, Sanghera, Abbas, and Barlow (2000), Worsfold et al. (2004) indicate that the main stimulus for providing food handlers with food hygiene training appeared to be due to legal obligation. Other factors which affect the type of food hygiene training used were financial costs (or lack of it) and convenience. The House of Commons Agriculture Committee on Food Safety (HCACFS (House of Commons Agriculture Committee on Food Safety), 1998) noted that medium and smaller – sized businesses do not have access to the same level of food safety expertise as larger premises and, even when undertaken, training may not be of sufficient quality. One possible reason why so many managers send food handlers on external accredited food hygiene courses is that they do not yet have the expertise to deliver relevant training. Mortlock et al. (2000) found that many food industry managers despite being highly qualified held no formal food hygiene qualifications.

6.5. Relevance of the course to work activities

The relevance or usefulness of the course to the trainee’s job has been shown to be an important predictor of training effectiveness (Baldwin & Ford, 1988; Goldstein, 1986).

Many authors (MacAuslan, 2001; Sprenger, 1999; Worsfold et al., 2004) have doubts over the content, suitability and assessment of accredited food hygiene courses for all food handlers, and a lack of relevance or perceived usefulness may result in the training being devalued by the food handler, therefore careful consideration needs to be given to the content and suitability of any food hygiene training programme.

6.6. Language considerations

The challenge for SME businesses is to provide food hygiene training in a language and at a level that allows the food handler to understand the content of the training. MacAuslan (2001) stated that many food establishments were found to employ food handlers from different ethnic backgrounds and most managers do not take the language abilities of the food handler into account before choosing the course for them, thus many food handlers were put onto accredited food hygiene courses which were not appropriate to their language needs. If relevant food hygiene knowledge and practical skills were to be taught slowly within the workplace by competent workplace staff, and there was appropriate time given to the food handler to practice those skills and assimilate relevant information, then many of the language barriers that food handlers face can be overcome without putting the onus on training providers, who may operate devoid of the food establishment.

6.7. How to deliver training

Authors (MacAuslan, 2001; Sprenger, 1999; Worsfold et al., 2004) suggest that food hygiene courses should be shorter, and more focused on the needs of the participant. Rennie (1994) suggests that improvements in food hygiene practices could be fostered by the provision of a physical and social environment that supports the application of appropriate food handling behaviours and mentions that training activities closely associated with such an environment would be more appropriate than food hygiene courses, which operate divorced from the workplace and use solely knowledge-based assessment techniques.

6.8. Certification

A certificate is a written declaration of attainment or achievement, for example it could be a nationally recognised accredited food hygiene certificate, provided by an awarding body or it could be a company specific certificate issued for attendance on an in-house course, or the achievement of a particular standard of work. A nationally accredited food hygiene certificate issued by an awarding body does not demonstrate that the candidate is competent to handle food safely; the candidate has only demonstrated sufficient knowledge in the subject to pass a formal examination. In some cases this could be 20 correct answers from a possible 30 multiple choice questions. Therefore, accredited food hygiene certificates are only a way of showing knowledge levels at a particular time and place and do not demonstrate long term compliance with food handling practices. Previous studies (Howes, McEwen, Griffiths, & Harris, 1996; Powell et al., 1997) have indicated that although food hygiene training may bring about an increased ‘knowledge’ of food safety issues it does not always result in a positive change in food handling behaviour. A more sensible approach could be that an appropriately trained person carry out, observations of food handling practices, at both busy and quiet times of the day, to measure practical competency even when the level of work is increased. Sprenger (2003) advocates the use of competency assessment cards and thus demonstrates that food handlers actually implements good hygiene practice. Once competency has been adopted in the workplace the behaviour should be regularly monitored to demonstrate increased or decreased performance over time. These results should be used to form part of an ongoing professional development programme.

The success, therefore, of the Food Hygiene Training Model relies on appropriately trained managers, who have the appropriate skills and subject knowledge to mentor the food handlers appropriately in-line with their food handling responsibilities, and who are able to provide both a physical and psychological environment conducive to food handler development and the enactment of safe food handling practices.

7. Conclusions

The Food Hygiene Training Model incorporates the widely tested Tones Health Action Model, (which synthesises the Health Belief Model and the Theory of Reasoned Action), and considers a range of other relevant factors that positively influence the long term transfer of training. Future food hygiene training strategies, if they are to be effective, should consider the recommendations made within this article, and where possible adopt the use of the Food Hygiene Training Model (Fig 2), to aide overall business improvements, and thus, an overall reduction of food-borne illnesses. The Food Hygiene Training Model should therefore be seen as a useful aide to the food industry in explaining the conceptual framework towards the adoption of safe food handling practices.

References


