Identifying Barriers Towards Optimal Cleaning and Sanitation Practices in a Small and Medium-Sized Enterprise Food Manufacturer

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Introduction

Cleaning and sanitation practices in the food industry have been traditionally improved through technological advancements focusing on better hygienic design, which can be expensive, and may not be affordable to small and medium enterprises (SME), which account for >90% of food manufacturers in the UK[1]. Incorporating elements of cleaning and sanitation practices optimization into the culture of the company may be a more cost-effective, feasible and effectual alternative for manufacturers. There is a lack of studies that focus specifically on improving cleaning operations through interventions focused on employees involved with cleaning. Largely, the literature focuses on safe food handling by the employees in the foodservice sector[2,3] and by consumers at home[4,5]. There is a need to determine cognitive and behavioural influences associated with cleaning practices in food manufacturers.

Purpose

To explore and identify barriers towards improvement of cleaning and sanitation practices associated with management and food-handlers behaviors in a ready-meal food manufacturing company.

Methods

Description of the food manufacturer:

- Single food production site with (*n*<100) employees, manufacturing a large range of ready-to-eat meals (*n*≥100) supplying some of the UK's leading retails chains and the food service sector.
- The product range includes: meat, dairy and vegetables based dishes, pasta and curries.
- Post production cleaning in the company is performed by the same food-handlers that produce the food products.

Semi-structured in depth interviews:

- Semi-structured, in-depth interviews (*n*=13) captured qualitative data related to employees' knowledge, attitudes, beliefs, and self-reported practices associated with cleaning and sanitation practices.
- The sample included employees directly or indirectly involved in company cleaning activities.
- Interviews were transcribed and coded using *NVivo* (QSR-Int, 2018) and analysed using theoretical thematic analysis.

Results and Discussion

Overall, the management and food-handlers from the food manufacturer indicated a positive attitude about current cleaning and sanitation practices in the company. The majority indicated the belief that the cleaning in the company is "*good*" and does not need improvement. Identified barriers towards cleaning improvement related to staff's behavior are presented in the Table 1 below:

Table 1 – Summarised findings related to identified barriers towards cleaning and sanitation practices improvement

Identified barrier	Quotes	Findings
Negative attitudes towards the need for improvement of cleaning	Food-handler: ***"you would always want to improve, you don't want to do worse, right?"; "We've been doing it like this for many years and had no issues"*** Management: ***"it can always be better"; "I believe that they are doing it*** **[cleaning]** ***as efficient as possible"; "so why change something that works?"***	• Most respondents agreed that the company cleaning practices can be improved. However, not all staff were in agreement regarding the need for improvement of cleaning in the company.
Optimistic bias[6] towards towards the current cleaning practices in the company	Food-handler: ***"good"*** [about current cleaning practices] Management: ***"what we are doing works"; "done to a very high standard"***	• Staff indicated they believed current company cleaning practices are adequate and do not need improvement. • Respondents indicated awareness of microbiological and allergen risks associated with improper cleaning and sanitation, minimising the possibility that lack of knowledge contributes to this belief.
Cleaning procedures may have been informally changed over time	Food-handler: ***"common sense should prevail"; "no need to look at the cleaning cards, we have the procedures burned on our retinas".*** Management: ***"[…] Just to find out that something has just not been followed on the procedure"***	• Company cleaning procedures have reportedly been informally altered over time by employees by slightly modifications to tasks performance. • A common belief among food-handlers was that "*common sense should prevail"* over the written cleaning instruction cards and some employees indicated that not consulting written cleaning procedures was acceptable. • These behaviors may impair the training of new employees as this is reportedly carried out by hands-on demonstrations of cleaning practices by an experienced employee.
Taking shortcut when tired and unknowingly changing the cleaning procedure	Food-handler: ***"And it's human nature, you don't do the job properly when you are so tired."*** Management: ***"Yeah, they do if they are tired, if they've done a normal shift not, but if they've done long shifts yes"***	• Some employees indicated they may create shortcuts by altering the cleaning procedures slightly, especially when tired. • Reportedly, there are no formal cleaning procedures training or refresher activities.
Hands-on informal cleaning and sanitation practices training	Food-handler: ***"I just show them only how to do it. Say you started today, I'd show you look this is how we clean this – and see if they can do it then"***	• The cleaning training is reportedly informal. • Training of new employees is caried out by hands-on demonstration of the cleaning by an experienced employee.
Costs associated with cleaning and sanitation practices not monitored	Food-handler: "**We never discuss water usage**"; Management: **"Costs are not an issue"; "It's never been on the agenda"; "They can use as much as they need to get the job done"**	• Findings indicated that costs associated with cleaning and sanitation procedures may not be monitored or discussed. This may negatively impact the acceptance of interventions related to costs optimization.

Significance

- Key barriers associated with optimal cleaning identified in a SME RTE food manufacturer include opposing attitudes towards the need for improvement of cleaning practices in the company, perceptions of optimistic bias[6] regarding current cleaning practices evidenced at both management and food-handler levels, reportedly reduced adherence to formal cleaning procedures due to some employees' beliefs that common sense should prevail over formal procedures, an informal training approach and lack of refresher training sessions related to cleaning practices.
- Further exploration of risk perceptions and quantification of attitudes towards cleaning optimization is required in order to support and overcome some of the identified barriers.
- Findings from this this study will inform the development of bespoke, targeted interventions to improve behaviors associated with the identified barriers.

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