Evaluation of hygienic-sanitary conditions of hospital nutrition and dietary services from the perspectives of internal and external auditors
Lize STANGARLIN1, Luisa Helena HECKTHEUER1, Ana Lucia SERAFIM1, Laissa Benites MEDEIROS1*

Abstract
The objective of this study was to evaluate the hygienic-sanitary conditions of hospital nutrition and dietary services using external and internal auditors. Eleven hospitals were evaluated for their nutrition and dietary services using an evaluation checklist based on food safety requirements in the current legislation. The checklist was applied by an internal auditor (a technical supervisor) and an external auditor (a professional with experience in food services) between August and October 2011. According to the number of items on the evaluation checklist that were considered adequate, the hospital facilities were ranked as excellent, good, regular, bad, or very bad. The results obtained by the auditors were compared. According to these results, it can be said that most of the hospital nutrition and dietary services were rated as good for overall quality by the internal auditor, while the external auditor classified them as Regular. There was a clear difference between the evaluations of the auditors, both in terms of the number of items considered adequate and the overall requirements’ average score. It can be concluded that hospital nutrition and dietary services should meet safety requirements in order to provide food. These facilities should have external audits conducted as a way to prevent routine problems from being perpetuated.

Keywords: food handling; good manipulation practices; food safety.

1 Introduction
In hospitals, nutrition and dietary services should be part of a structured and organized department that provides nutritional assistance by preparing high-quality meals with high standards of food safety. Minimizing risks is essential to protect patients from possible foodborne diseases (SEFA et al., 2010; NEWELL et al., 2010; TODD et al., 2007; STANGARLIN et al., 2013).

In the hospital environment, the risk of contracting foodborne diseases is great because the food is meant to employees, caregivers, and patients, whose immune systems may be weakened (SILVA NETO, 2006; RÉGLIER-POUPET et al., 2005; RODRIGUEZ et al., 2011). Foodborne diseases can aggravate the health state of the patients and generate unnecessary medical spending, affecting the operation of hospital services (LUND; O’BRIEN, 2009).

According to Tokuc et al. (2009), the mishandling of food facilitates the spread of pathogens that cause foodborne disease outbreaks in hospitals, which affects employees, visitors, and patients, especially those with low immunity. Offering a safe meal for these individuals is very important, and a systematic approach is required to control food contaminants. This approach includes implementing tools to preserve the hygienic-sanitary quality of foods, updating knowledge and perceptions, and supervising the technical staff members responsible for identifying factors that may contribute to the development of the foodborne diseases (BUCCHERI et al., 2007; SEAMAN; EVES, 2008; SOUSA; CAMPOS, 2003).

Among the tools used by food companies to promote hygienic-sanitary quality is the Good Practices program. This program, which is regulated by current laws to assist in the production and commercialization of food, is the main legal mechanism to protect the health of individuals (SANTANA et al., 2009; SACCIO; ORTIGOZA, 2007).

Currently, in Brazil, there is no legislation on implementing tools to promote hygienic and sanitary quality of food in hospital nutrition and dietary services. The existing technical regulations do not include the surveillance of these facilities, but they are used as a reference in this segment because they help the control of food safety (STANGARLIN et al., 2013). Thus, the hospital staff members responsible for it may have difficulty implementing the procedures that are required to control the quality and safety of food (STANGARLIN, 2008).

Therefore, this study aimed to evaluate the hygienic-sanitary conditions in hospital nutrition and dietary services and compare the evaluation performed by internal and external auditors.

2 Materials and methods
To determine the sample for this study, a survey of all the hospitals that belong to the 4th Regional Coordination of Health of RS in Brazil was conducted through the Secretary of Health of the city of Santa Maria, Rio Grande do Sul (RS). There are 26 hospitals located in the following cities: Agudo, Cacequi, Dona Francisca, Faxisal do Soturno, Formigueiro, Ivorá, Jaguari, Júlio de Castilhos, Mata, Nova Palma, Paraiso do Sul, Pinhal Grande,
Hygienic-sanitary conditions of hospital nutrition and dietary services

Restinga Seca, Santa Maria, Santiago, São Francisco de Assis, São Pedro do Sul, São Sepé, São Vicente do Sul, and Silveira Martins.

The inclusion criterion was the participation of at least one staff member responsible for the hospital nutrition and dietary services.

In this study, each of the hospital nutrition and dietary services was evaluated by the responsible staff member, who was considered the internal auditor. A external auditor, a professional with experience in the food area, also evaluated all the locations. The auditors’ evaluations of the nutrition and dietary services were conducted in every hospital between August and October 2011 with no consultation between the auditors.

All of the areas involved in the hospital nutrition and dietary service (i.e., the receiving area, areas where food was stored and prepared, areas where utensils were cleaned, the kitchens, the locker rooms, and the restrooms used by the food handlers) were considered for the evaluation in the present study. The lactary and enteral nutrition services were not considered because they have their own specific regulations.

As a data collection tool to evaluate the hospital nutrition and dietary services using the criteria required to ensure food safety, an evaluation checklist was prepared during the months of June and July 2011. This list, elaborated by Stangarlin et al. (2013), included the requirements under the current legislation and regulatory standards in Brazil, including Ordinance No. 326/1997 (BRASIL, 1997), Resolution Board (RDC) No. 275/2002 (BRASIL, 2002); Ordinance No. 78/2009 (RIO GRANDE DO SUL, 2009); CVS Ordinance No. 6/1999 (SÃO PAULO, 1999), and the guidelines of the Brazilian Association of Technical Standards - ABNT NBR 15635:2008 (ASSOCIAÇÃO..., 2008).

The evaluation checklist comprised the following checkpoints: buildings and physical facilities (type of building material and the condition of facilities); equipment, furniture, and utensils (material type, condition and operation); maintenance and equipment calibration (procedures and records regarding the maintenance of equipment and records of the calibration of the measuring instruments); hygiene of the facilities, equipment, furniture and utensils (procedures, sanitizing products and utensils used for cleaning); water supply (drinkability, responsible staff members, and records of the frequency of water reservoir cleaning); integrated control of urban vector and pest (preventive and chemical control); waste management (collectors and collection procedures); food handlers (health, personal hygiene, behavior, uniforms, and training records); operational steps (working with suppliers, receiving food, storing food, handling food, defrosting, washing fruits and vegetables, using eggs, conducting heat treatment, cooling, evaluating food using time and temperature criteria, maintaining and distributing ready-to-eat food, and storing samples); and documentation (implementation of Good Handling Practices, Standard Operating Procedures and Essential Operational Controls).

In the list of requirements, each item was evaluated as not applicable (when the question did not include activities conducted in the hospital nutrition and dietary service), appropriate or inappropriate. The number of items that met the requirements were counted upon; the hospital facilities with a percentage between 91-100% were classified as excellent, 70-90% were classified as good, 50-69% were classified as Regular, 20-49% were classified as bad, and 0-19% were classified as very bad (STANGARLIN et al., 2013).

After the internal and external auditors had completed the evaluation of each of the hospital nutrition and dietary services, the percentage of overall adequacy and the requirements was compared. The results were evaluated using the Statistical Package for the Social Sciences (SPSS) software version 19.0. The data were analyzed using simple descriptive statistics (mean ± standard deviation, median, percentile, and percentage). To compare the overall quality averages and the requirement scores given by auditors, the T test for paired samples were used. The threshold for statistically significant differences between groups was set at p <0.05.

This study was conducted in accordance with the ethical standards in Resolution No. 196/96 (BRASIL, 1996) with the approval of the Research Ethics Committee under number 08120512.6.0000.5346.

3 Results and discussion

After applying the inclusion criteria, the sample used in the present study consisted of 11 hospital nutrition and dietary services. Among the potentially eligible hospital subjects for this research, 7 had no staff members responsible for these services, and 8 did not agree to participate in the study. Costa and Rocha (2010) state that the responsible staff member should have specific knowledge about hospital nutrition and dietary services and should play a role in the preservation, promotion, and restoration of the patients’ health, which are standards established by the current legislation (CONSELHO..., 2005; BRASIL, 1991).

Table 1 shows the overall hospital quality classifications according to their nutrition and dietary services after the internal and external audits. It is possible verify that the internal auditors classified 2 of the hospital services as excellent,

<table>
<thead>
<tr>
<th>Hospital nutrition and dietary service</th>
<th>Internal auditor Classification</th>
<th>External auditor Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Good</td>
<td>Regular</td>
</tr>
<tr>
<td>2</td>
<td>Good</td>
<td>Bad</td>
</tr>
<tr>
<td>3</td>
<td>Regular</td>
<td>Bad</td>
</tr>
<tr>
<td>4</td>
<td>Good</td>
<td>Regular</td>
</tr>
<tr>
<td>5</td>
<td>Excellent</td>
<td>Regular</td>
</tr>
<tr>
<td>6</td>
<td>Good</td>
<td>Regular</td>
</tr>
<tr>
<td>7</td>
<td>Regular</td>
<td>Regular</td>
</tr>
<tr>
<td>8</td>
<td>Excellent</td>
<td>Bad</td>
</tr>
<tr>
<td>9</td>
<td>Good</td>
<td>Regular</td>
</tr>
<tr>
<td>10</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>11</td>
<td>Good</td>
<td>Good</td>
</tr>
</tbody>
</table>
Table 2. Comparison of the percentage of facilities considered adequate and the overall average of the hospital nutrition and dietary services requirements evaluated by internal and external auditors in the hospitals in the 4th Regional Coordination of Health (RS), Brazil, 2011.

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Requirements considered adequate (%)</th>
<th>Internal auditors Mean ± SD</th>
<th>External auditors Mean ± SD</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building and physical facilities</td>
<td></td>
<td>67 ± 13</td>
<td>72 ± 7</td>
<td>0.30</td>
</tr>
<tr>
<td>Equipment, furniture, and utensils</td>
<td></td>
<td>74 ± 28</td>
<td>69 ± 25</td>
<td>0.67</td>
</tr>
<tr>
<td>Maintenance and equipment calibration</td>
<td></td>
<td>48 ± 33</td>
<td>28 ± 23</td>
<td>0.17</td>
</tr>
<tr>
<td>Hygiene of the facilities, equipment, furniture, and utensils</td>
<td></td>
<td>90 ± 9</td>
<td>66 ± 11</td>
<td>0.01</td>
</tr>
<tr>
<td>Water supply</td>
<td></td>
<td>86 ± 17</td>
<td>90 ± 19</td>
<td>0.71</td>
</tr>
<tr>
<td>Integrated control of urban vector and pest</td>
<td></td>
<td>98 ± 6</td>
<td>93 ± 13</td>
<td>0.17</td>
</tr>
<tr>
<td>Waste management</td>
<td></td>
<td>66 ± 29</td>
<td>70 ± 25</td>
<td>0.64</td>
</tr>
<tr>
<td>Food handlers</td>
<td></td>
<td>68 ± 15</td>
<td>56 ± 13</td>
<td>0.06</td>
</tr>
<tr>
<td>Operational steps</td>
<td></td>
<td>82 ± 13</td>
<td>58 ± 14</td>
<td>0.005</td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
<td>61 ± 31</td>
<td>9 ± 18</td>
<td>0.004</td>
</tr>
<tr>
<td>Overall average of requirements considered adequate</td>
<td></td>
<td>74 ± 9</td>
<td>59 ± 9</td>
<td>0.009</td>
</tr>
</tbody>
</table>

%: Percentage; Mean; SD: standard deviation. * T test for independent samples.
Currently, in Brazil, there is no legislation on implementing tools to promote hygienic and sanitary tools for food service in hospital nutrition and dietary services. However, the Brazilian Association of Technical Standards published the NBR Normative 15.635:2008, which includes hospital kitchens. This guideline describes the documents that set the stages of food preparation, namely the Manual of Good Handling Practices, Standard Operating Procedures, and Essential Operational Control (ASSOCIAÇÃO..., 2008).

Keeping records of these practices in these documents is essential because it standardizes the procedures and improves the hygienic-sanitary conditions of food services (RODRIGUES; SILVA; ALEIXO, 2012). A study conducted in an establishment in the city of Rio de Janeiro (RJ) found that after the development and implementation of the documents, the hygienic procedures improved and became more standardized, employees performed more tasks, food waste decreased, and the sanitary inspection location was deeper (FERREIRA NETO; GUIMARÃES; SÁRCIA, 2007). It is also important to note that the use of high-quality tools in food services requires not only the existence of documents and standards, but also their effective integration with the company procedures (VEIROS et al., 2009).

After applying the evaluation checklist (Table 2), the external auditor found compliance rates that were significantly lower than the those found by the internal auditors concerning the requirements related to the sanitation of the facilities, equipment, furniture, and utensils (p = 0.01), operational stages (p = 0.005), and documentation (p = 0.004). The requirements that showed the greatest compliance with the requirements in terms of hospital nutrition and dietary services, according to the internal auditors, were those that required their supervision. This result demonstrates that the work routine and the environment can influence perceptions of nonconformities.

According to Seaman and Eves (2010), some food service supervisors have limited awareness or poor food handling and hygiene, which makes it more difficult to evaluate the facilities. Adequate information that is updated in training sessions, identifying factors that contribute to positive attitudes, and changing the behavior of some individuals in these facilities can minimize the contamination of foods (ACIKEL et al., 2008; BUCCHERI et al., 2007).

According to the Codex Alimentarius, food is only considered safe and unadulterated if practices, inspections, and tools are used to ensure the quality of food (FOOD..., 2006). Quick observations and actions to eliminate the cause of detected nonconformities during food preparation, as well as the adoption of preventive and corrective measures, are essential to ensure hygienic-sanitary conditions because any failure during any of the stages of preparation may jeopardize and harm the food that is being prepared (BADARÔ; AZEREDO; ALMEIDA, 2007; OZILGEN, 2012).

4 Conclusions

Based on the results obtained in the present study, it is concluded that hospitals’ internal auditors classified most of the nutrition and dietary services as having good overall quality, whereas the external auditors classified most services as Regular. There was a statistically significant difference between the evaluations of the auditors.

Therefore, hospital nutrition and dietary services should adequately meet the requirements for food safety. The internal auditors should deepen their knowledge about the quality and safety of food to be able to perform a more thorough and critical analysis and detect possible nonconformities, mainly concerning the requirements that require their supervision.

It is worth mentioning that external audits are important to avoid perpetuating routine problems because they offer an impartial evaluation of the nonconformities found.

References
CONSELHO FEDERAL DE NUTRICIONISTAS. Resolução CFN nº 380, de 9 de janeiro de 2005. Dispõe sobre a definição das


STANGARLIN, L. Avaliação das condições de qualidade em Serviços de Alimentação e Unidades Hospitalares na cidade de Santa Maria, RS. 2008. 192 f. Dissertação (Mestre em Ciência e Tecnologia dos Alimentos)-Universidade Federal de Santa Maria, Santa Maria, 2008.


