DISCIPLINARUM SCIENTIA *Disciplinarum Scientia.* **Série: Ciências da Saúde**
Santa Maria, v. 26, n. 1, p. 133-142, 2025
Recebido em: 08.03.2025. Aprovado em: 10.07.2025.
ISSN 2177-3335 | DOI: doi.org/10.37777/dscs.v26n1-5300

ASSESSMENT OF HYGIENIC AND SANITARY CONDITIONS IN FOOD AND NUTRITION SERVICE UNITS IN THE CAMPINAS-SP REGION

AVALIAÇÃO DAS CONDIÇÕES HIGIÊNICO-SANITÁRIAS DE UNIDADES DE ALIMENTAÇÃO E NUTRIÇÃO NA REGIÃO DE CAMPINAS-SP

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ABSTRACT

The increasing demand for meals consumed outside the home, driven by lifestyle changes and limited time for cooking, underscores the importance of maintaining hygiene and sanitary standards in food service operations. Food safety relies heavily on strict adherence to Good Manufacturing Practices (GMP). This study evaluated the hygienic and sanitary conditions of six private Food and Nutrition Service Units (FNSUs) in the Campinas metropolitan area, São Paulo, Brazil; including two schools, two institutional units, and two long-term care facilities for the elderly. Compliance and non-compliance rates were assessed following the criteria established by Stangarlin *et al.* (2013b). The results revealed substantial variability across the units, with ratings ranging from excellent (91%) to poor (40%). Non-conformities were particularly prevalent in units serving vulnerable populations, highlighting gaps in regulatory compliance. The findings emphasize that systematic use of assessment tools, combined with corrective action plans and ongoing staff training, is essential to ensure the delivery of safe food and adherence to current legislation.

Keywords: Good Manufacturing Practices; Sanitary assessment; Food safety.

RESUMO

A crescente demanda por refeições fora do lar, impulsionada por mudanças no estilo de vida e pela escassez de tempo para cozinhar, reforça a importância do controle higiênico-sanitário em serviços de alimentação. A segurança alimentar, nesse contexto, depende diretamente da conformidade com as Boas Práticas de Fabricação. Este estudo teve como objetivo avaliar as condições higiênico-sanitárias de Unidades de Alimentação e Nutrição (UAN) da região metropolitana de Campinas-SP. Foram avaliadas seis UAN privadas - duas escolares, duas institucionais e duas Instituições de Longa Permanência para Idosos (ILPI) - com base nos percentuais de adequação e inadequação, segundo os critérios de Stangarlin et al. (2013b). Os resultados revelaram heterogeneidade entre os estabelecimentos, com classificações que variaram de excelente (91%) a ruim (40%). A presença de não conformidades, especialmente em instituições que atendem populações vulneráveis, evidencia falhas no cumprimento das normativas sanitárias. Conclui-se que a aplicação sistemática de instrumentos de avaliação, aliada à implementação de planos de ação corretivos e à capacitação contínua das equipes, é essencial para assegurar a oferta de alimentos seguros e em conformidade com a legislação vigente.

Palavras-chave: *Boas práticas; Avaliação sanitária; Segurança alimentar.*

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INTRODUCTION

Food and Nutrition Service Units (FNSUs) are responsible not only for meal production but also for providing balanced diets under hygienic and sanitary conditions that ensure food quality and safeguard consumers' health (Santos & Alves, 2014); with the presence of a qualified nutritionist being essential to carry out these functions. According to the Federal Council of Nutritionists Resolution No. 600, dated February 25, 2018, nutritionists may work in a variety of settings, including companies and institutions, maritime hospitality, hotels, airlines, correctional facilities, general clinics, hospitals, day hospitals, Emergency Care Units (UPAs), renal therapy services, clinical spas, Long-Term Care Institutions (LTCIs) and similar facilities, commercial restaurants, mobile food services, and event catering (Brazil, 2018).

In this context, the role of the nutritionist is indispensable, as lifestyle changes, limited time for food preparation, and socioeconomic shifts have contributed to an increase in meals consumed outside the home (Grosbelli *et al.*, 2021). Considering these factors, careful attention is required, since the lack of food safety can lead to the development of Waterborne and Foodborne Diseases (WFDs); which may result from consuming contaminated food or water and cause symptoms such as nausea, vomiting, and diarrhea (Nunes *et al.*, 2017).

Food contamination by microorganisms often occurs due to insufficient knowledge or failures in the proper implementation of good handling practices (Santos & Palma, 2019). These include incorrect hand hygiene upon arrival at work, before and after handling food, or after touching contaminated surfaces; not keeping hair restrained with a cap; having long or painted nails; and talking, eating, or handling money during food preparation (Brazil, 2004). Additionally, the health of food handlers and adherence to Standard Operating Procedures (SOPs) are key factors in ensuring proper food handling practices (Souza, 2006).

Therefore, the sanitary quality of a food service is essential for the implementation of legislation that establishes adequate food handling procedures, ensuring food safety (Biolchi *et al.*, 2022). To achieve this, control measures must be established, as defined by RDC No. 216, item 2.12, which describes a control procedure as "a measure adopted with the purpose of preventing, reducing to an acceptable level, or eliminating a physical, chemical, or biological agent that may compromise the hygienic-sanitary quality of food" (Brazil, 2004).

Another measure to ensure food quality, reduce potential contamination risks, and prevent WFDs is the application of the inspection checklist for good practices in commercial food establishments and food services developed by the Center for Sanitary Surveillance (CVS-5, 2013).

> [...] establishes essential requirements for Good Practices and Standard Operating Procedures (SOPs) in food establishments and services, aiming to guarantee the hygienic and sanitary conditions of food (CVS-5 Ordinance, 2013).

Accordingly, establishing procedures that promote hygienic and sanitary conditions throughout food handling, preparation, portioning, storage, distribution, transport, display, and delivery to consumers is essential (Brazil, 2004). The methodological approach proposed by Stangarlin *et al.* (2013b) allows for a more rigorous assessment of hygienic and sanitary conditions by providing objective evaluation parameters that complement and refine the CVS-5 (2013) guidelines; which in some cases leave room for subjective interpretation (Cardoso, 2020).

Therefore, the aim of this study was to conduct a descriptive evaluation of the hygienic and sanitary conditions of FNSUs in the metropolitan region of Campinas, São Paulo, using the CVS-5 inspection checklist and analyzing compliance and non-compliance percentages based on the parameters proposed by Stangarlin *et al.* (2013b).

METHODOLOGY

The study was conducted in six private FNSUs, including two school-based units, two institutional units, and two LTCIs for the elderly, all located in the metropolitan region of Campinas, São Paulo, Brazil. Data were collected between August and October 2024. This was an observational and descriptive study focused on the qualitative analysis of Good Food Handling Practices in collective food services, with no intervention implemented.

Institutional approval for the study was obtained through a consent form signed by the responsible nutritionist. It should be noted that, since no data were collected directly from human subjects, this procedure is considered ethically sufficient according to applicable guidelines for research conducted in institutional settings.

The study included five small FNSUs serving up to 500 meals per day and one medium-sized FNSU producing up to 695 meals per day, operating with a centralized distribution system. Table 1 summarizes the characteristics of the FNSUs evaluated.

Table 1 - Characteristics of the FNSUs evaluated in the metropolitan region of Campinas, SP.

Sites	Operation hours	Number of users	Number of meals served	Nutritionist	Food handler
School-based FNSU 1	7:00 - 16:48	197	323	1	4
School-based FNSU 1	9:30 - 15:50	130	240	1	8
Private Institutional FNSU 1	6:50 - 06:50	290	695	1	10
Private Institutional FNSU 1	6:00 - 16:00	125	205	1	5
LTCI FNSU 1	7:00 - 20:00	29	120	1	2
LTCI FNSU 2	7:00 - 20:00	49	98	1	2

Legend: Information regarding the evaluated locations.
Source: Author.

The checklist was applied during working hours with the team's awareness, through direct observation of hygienic and sanitary conditions. The model used included 55 items grouped into six evaluation chapters according to CVS-5 (2013):

(1) Employee hygiene and health, technical responsibility, and staff training

(2) Food sanitary quality and production

(3) Cleaning and sanitation of facilities and the environment

(4) Operational support

(5) Sanitary quality of buildings and facilities

(6) Documentation and record-keeping

The Good Practices Inspection Checklist was completed through direct observation, with records entered into Google Forms. The response options for each checklist item were recorded as "Compliant" (C), when the FNSU met the observed requirement; "Non-Compliant" (NC), when the FNSU failed to meet the observed requirement; and "Not Applicable" (NA), when the item was considered irrelevant to the specific setting. Items marked as "Not Applicable" were excluded from the evaluation. Data were subsequently tabulated in Microsoft Excel 365 and analyzed in terms of compliance and non-compliance percentages according to the six chapters established by CVS-5 (2013).

Although CVS-5 (2013) defines the evaluation criteria, it does not provide a classification model for the level of compliance of establishments. Therefore, the classification system proposed by Stangarlin *et al.* (2013b) was adopted, using the following compliance percentages to categorize the hygienic and sanitary conditions of the units:

- **Excellent:** 91%-100% compliance with the requirements
- **Good:** 70%-90% compliance with the requirements
- **Regular:** 50%-69% compliance with the requirements
- **Poor:** 20%-49% compliance with the requirements
- **Very poor:** 0%-19% compliance with the requirements

RESULTS

The assessment of hygienic and sanitary conditions was conducted using the Good Practices Inspection Checklist for Commercial Food Establishments and Food Services (CVS-5, 2013); a structured model that allows for the identification of compliance and non-compliance. This analysis is essential to support interventions that promote the provision of safe and high-quality food to the population. Table 2 presents the results in terms of compliance and non-compliance percentages for each of the six chapters of the CVS-5 (2013) checklist.

Units achieving over 70% compliance in the evaluated categories were considered excellent or in good hygienic and sanitary condition. The results showed that: (1) *Employee hygiene and health,*

technical responsibility, and staff training: four FNSUs achieved this level - two school-based private units, one private institutional unit, and one LTCI; (2) *Sanitary quality of food production:* three FNSUs stood out - one school-based unit and two LTCIs; (3) *Cleaning and sanitation of facilities and the environment:* four FNSUs achieved good results - one private school unit, one institutional unit, and two LTCIs; (4) *Operational support:* all six FNSUs exceeded 78% compliance; (5) *Sanitary quality of buildings and facilities:* only the LTCI units were classified; (6) *Documentation and record-keeping:* all units achieved 100% compliance.

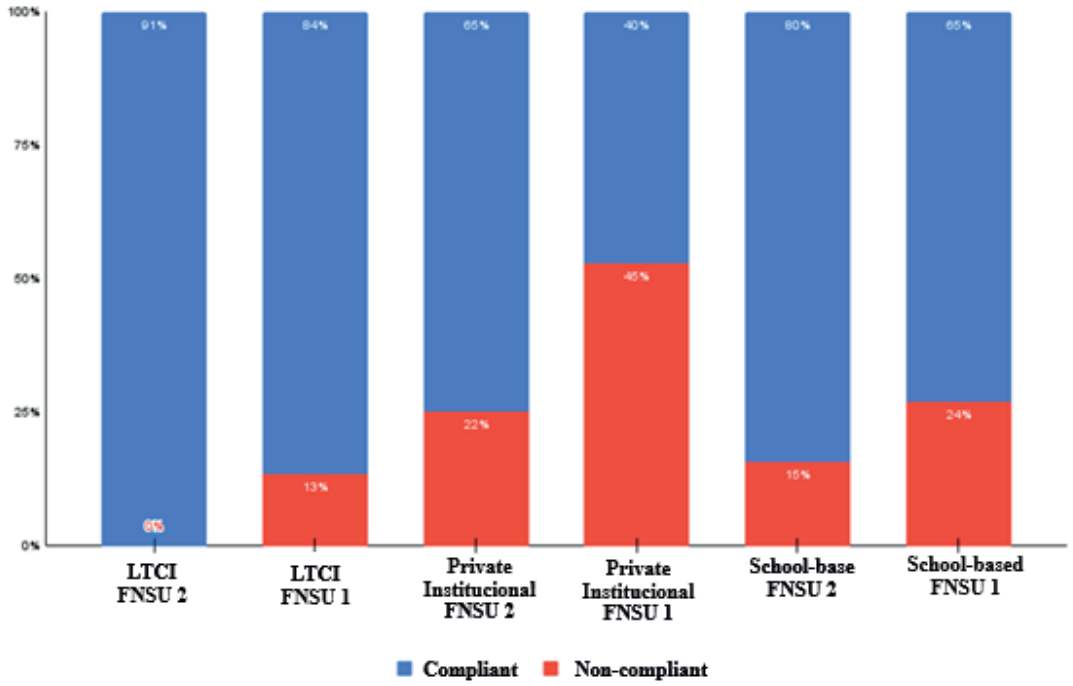
Table 2 - Compliance and non-compliance percentages for each evaluation chapter of the CVS-5 (2013) checklist for FNSUs in the metropolitan region of Campinas, SP.

Evaluated group	**School-based FNSU 1**			**School-based FNSU 2**			**Private Institutional FNSU 1**			**Private Institutional FNSU 2**			**LTCI FNSU 1**			**LTCI FNSU 2**		
Evaluated items	**C**	**NC**	**NA**	**C**	**NC**	**NA**	**C**	**NC**	**NA**	**C**	**NC**	**NA**	**C**	**NC**	**NA**	**C**	**NC**	**NA**
II - Employee Hygiene and Health, Technical Responsibility, and Staff Training	78%	22%	0%	100%	0%	0%	44%	56%	0%	89%	11%	0%	67%	33%	0%	100%	0%	0%
III - Sanitary Quality of Food Production	67%	17%	17%	83%	11%	6%	28%	44%	28%	50%	28%	22%	83%	11%	6%	83%	0%	17%
IV - Cleaning and Sanitation of Facilities and Environment	67%	33%	0%	100%	0%	0%	67%	33%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
V - Operational Support	78%	0%	22%	89%	0%	11%	78%	11%	11%	78%	11%	11%	100%	0%	0%	89%	0%	11%
VI - Sanitary Quality of Buildings and Facilities	47%	47%	7%	53%	40%	7%	67%	13%	20%	53%	33%	13%	80%	13%	7%	93%	0%	7%
VII - Documentation and Record-Keeping	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%

Legend: C = Compliant; NC = Non-Compliant; NA = Not Applicable.
Source: Author.

Figure 1 illustrates the overall classification of compliance and non-compliance percentages according to the system proposed by Stangarlin *et al.* (2013b).

Figure 1 - Overall compliance and non-compliance percentages of FNSUs evaluated in the metropolitan region of Campinas, SP, according to Stangarlin *et al.* (2013b).



Source: Author.

Based on the classification criteria proposed by Stangarlin *et al.* (2013b), a wide variation was observed in the hygienic and sanitary conditions of the evaluated FNSUs. One unit achieved 91% compliance and was classified as excellent, indicating satisfactory conformity with the assessed parameters. Two FNSUs had compliance rates between 80% and 84%, classified as in good condition, although with areas still requiring improvement. Two other units achieved 65% compliance, reflecting a regular situation with a need for more consistent adjustments. Finally, one FNSU achieved only 40% compliance, indicating unsatisfactory hygienic and sanitary conditions and highlighting the urgency for corrective interventions.

DISCUSSION

The analysis of the evaluated FNSUs, based on the six chapters of CVS-5 (2013), revealed that the main points of non-compliance were concentrated in the following areas: (1) Employee hygiene and health, technical responsibility, and staff training; (2) Sanitary quality of food production; (3) Cleaning and sanitation of facilities and the environment; and (5) Sanitary quality of buildings and facilities. These non-conformities were recurrent, regardless of the type of institution (school-based, institutional, or LTCI), with variations in severity as shown in Table 2 and Figure 1.

In school-based FNSUs, higher percentages of non-compliance were observed, particularly in Unit 1, especially regarding staff training, facility sanitation, and physical infrastructure. These inadequacies included the use of reusable cloths, lack of automatic door closures, and untrapped floor

drains. Such findings directly compromise food safety and corroborate the results reported by Ribeiro *et al.* (2018), who also identified similar failures in public schools.

Private institutional FNSUs showed concerning non-compliance rates, notably in Unit 1, where significant deficiencies were observed in relation to food handlers; including the use of personal adornments, absence of personal protective equipment (PPE), and insufficient training. Risk practices were identified during food production, such as improper thawing and lack of temperature control. These findings, shown in Table 2, contrast with those of Lenz *et al.* (2019), who observed compliance rates ranging from 90.85% to 22.27% in similar institutions, with the highest non-compliance found in building structure, facilities, movable equipment, utensils, and handling practices.

In LTCI FNSUs, results were more positive. Unit 2 achieved 100% compliance, whereas Unit 1 exhibited minor deficiencies in staff training and physical structure, such as the lack of regular training and protective covers for lighting fixtures. Nonetheless, compliance rates were higher than those reported by Ferreira (2019), who found an overall conformity of 41%, with the largest non-compliances in sampling, monitoring and records, hygiene, general production aspects, and documentation and operational authorization.

Regarding chapters (4) Operational support and (6) Documentation and record-keeping, all FNSUs achieved good or excellent ratings. However, discrepancies between formal documentation and actual routine practices reveal weaknesses in the implementation of good practices. Failures such as the use of adornments, improper thawing, lack of temperature monitoring, and cross-contamination risks highlight the need for continuous staff training, technical supervision, and reinforcement of hygienic-sanitary control routines.

The overall classification of the FNSUs, according to Stangarlin *et al.* (2013b), showed variations between different types of institutions, as illustrated in Graph 1.

Private school-based FNSUs achieved distinct classifications, with compliance rates of 80% and 65%, respectively. Despite serving similar populations, differences in the number of food handlers and production volumes may explain the variation in compliance levels. This finding aligns with Mendes *et al.* (2019), who also reported variations in compliance percentages between two evaluated schools, even under similar operational conditions.

Private institutional FNSUs presented the most critical results. One unit was classified as “poor” with 40% compliance, while the other was “regular” with 65% compliance. Discrepancies may relate to structural and organizational factors, such as unit size, number of meals produced per day, and management practices. Studies like Lenz *et al.* (2019) indicate that small units can achieve high compliance rates when equipped with adequate infrastructure, trained staff, and well-established processes - factors that appear to have negatively influenced the results of the institutional FNSUs in this study.

LTCI FNSUs showed more positive outcomes. Both units were classified as “excellent” and “good,” with compliance rates of 91% and 84%, respectively. Similarity in unit size, number of meals,

and number of handlers suggests that the experience of the responsible nutritionist may have played a significant role in improving hygienic-sanitary conditions; as the unit with the longest tenured nutritionist demonstrated better performance. Ferreira (2020) supports this hypothesis, reporting lower compliance rates in LTCIs with less experienced technical management.

Overall, the results indicate that FNSU performance is directly related to multiple factors, including infrastructure, number of staff, technical training, management experience, and organization of production processes. The total analysis of compliance and non-compliance, as shown in Graph 2, reinforces the importance of the nutritionist in promoting good practices and adherence to the criteria established by current legislation, such as RDC No. 216/2004, to ensure food quality and safety.

The role of the responsible nutritionist is essential for ensuring food safety, especially when considering the diversity of the population served, including children, the elderly, and individuals with specific clinical conditions. Systematic application of the CVS-5 (2013) checklist constitutes a strategic diagnostic tool, supporting corrective action planning and the consolidation of a culture of good practices within the evaluated units.

CONCLUSION

The current study revealed variations in the hygienic and sanitary conditions of FNSUs in the metropolitan region of Campinas, SP. The application of the CVS-5 (2013) Inspection Checklist proved effective in identifying non-compliance and guiding corrective actions. According to the criteria of Stangarlin *et al.* (2013b), the evaluated FNSUs were classified between “poor” and “excellent,” demonstrating the value of the CVS-5 checklist as a practical diagnostic tool to support intervention planning. Furthermore, continuous staff training in Good Food Handling Practices is essential to ensure compliance with current legislation and improve service quality. Considering that many of these units serve vulnerable populations, strengthening sanitary surveillance and incorporating complementary evaluation criteria are recommended to ensure food safety. The nutritionist, as the technical manager and quality supervisor, plays a crucial role in this process, contributing directly to public health promotion.

REFERENCES

BIOLCHI, A. M. R. *et al.* Avaliação de boas práticas em serviços de alimentação de três Unidades de Alimentação e Nutrição. **Revista Simbiologias**, Vale do Taquari/RS, v. 14, n. 20, p. 89-101, nov. 2022. Disponível em: https://simbiologias.ibb.unesp.br/index.php/files/article/view/257/7. Acesso em: 8 set. 2024.

BRASIL. Agência Nacional de Vigilância Sanitária. **Resolução RDC nº 216, de 15 de setembro de 2004.** Dispõe sobre regulamento técnico de boas práticas para serviços de alimentação. **Diário Oficial da União:** seção 1, Brasília, DF, 16 set. 2004, p. 1-9. Disponível em: https://bvsms.saude.gov.br/bvs/saudelegis/anvisa/2004/res0216_15_09_2004.html. Acesso em: 3 set. 2024.

BRASIL. Agência Nacional de Vigilância Sanitária. **Resolução nº 600, de 25 de fevereiro de 2018.** Dispõe sobre a definição das áreas de atuação do nutricionista e suas atribuições. **Diário Oficial da União:** seção 1, Brasília, DF, 23 mai. 2018, p. 1-55. Disponível em: https://www.cfn.org.br/wp-content/uploads/resolucoes/resolucoes_old/Res_600_2018.htm. Acesso em: 8 set. 2024.

SÃO PAULO. Secretaria de Estado da Saúde. Coordenadoria de Controle de Doenças. Centro de Vigilância Sanitária. Divisão de Produtos Relacionados à Saúde. **Portaria CVS nº 5, de 9 de abril de 2013.** Aprova o regulamento técnico sobre boas práticas para estabelecimentos comerciais de alimentos e para serviços de alimentação, e o roteiro de inspeção, anexo. **Diário Oficial do Estado de São Paulo:** seção I, São Paulo, 19 abr. 2013, p. 32-35. Disponível em: https://cvs.saude.sp.gov.br/up/PORTARIA%20CVS-5_090413.pdf. Acesso em: 8 set. 2024.

CARDOSO, R.S. Avaliação das condições sanitárias em restaurantes self-service. **J.Health Sci Inst**, Taubaté, v. 38, p. 52-57, 2020. Disponível em: https://repositorio.unip.br/wp-content/uploads/2020/12/08V38_n1_2020_p52a57.pdf. Acesso em: 29 ago.2024.

FERREIRA, A.C; PAES, S.N.D; DO NASCIMENTO, K.O. Aspectos Higiênico-sanitários da Cozinha de uma Instituição de Longa Permanência para Idosos. **Nutrição Brasil**, Volta Redonda/RJ, v. 19, n. 1, p. 23-31, 2020. DOI: http://dx.doi.org/10.33233/nb.v19i1.2280. Acesso em: 15 nov.2024.

GROSBELLI, C. *et al.* Avaliação das Condições Higiênico-Sanitárias em Restaurantes comerciais em uma cidade do norte do Rio Grande do Sul. **Revista Perspectiva**, Rio Grande do Sul, v. 45, n. 169, p. 83-92, mar. 2021. Disponível em: http://ojs.uricer.edu.br/ojs/index.php/perspectiva/article/view/136/65. Acesso em: 04 set. 2024.

LENZ, B.E *et al.* Verificação de Boas Práticas em Duas Unidades de Alimentação e Nutrição Inseridas em Dois Municípios do Rio Grande do Sul, **Revista Simbiologias**, Rio Grande do Sul, v. 11, n. 15, p. 1-15, 2019. Disponível em: https://simbiologias.ibb.unesp.br/index.php/files/article/view/203/229. Acesso em: 19 nov. 2024.

MENDES, T.I.L *et al.* Condições Higiênicas e Sanitárias de Unidades de Alimentação e Nutrição de Escolas em Tempo Integral, **Revista Eletrônica Acervo Saúde**, Piauí, v. 31, n. 31, p. 1-10, ago. 2019. Disponível em: https://acervomais.com.br/index.php/saude/article/view/1150/694. Acesso em: 14 nov. 2024.

NUNES, S.M *et al.* Surto de Doença Transmitida por Alimentos nos Municípios de Mauá e Ribeirão Pires - SP. **Revista Higiene Alimentar**, São Paulo, v. 31, n.264/265, p. 97-102, fev. 2017. Disponível em: https://docs.bvsalud.org/biblioref/2017/04/833113/264-265-sitecompressed-97-102.pdf. Acesso em: 04 set. 2024.

PEREIRA, F.G *et al.* Condições Higiênicas de um Serviço de Alimentação em um Centro de Atenção Psicossocial. **Revista de Ciência y Tecnología**, Argentina, v.23, p. 48-53, jun. 2015. Disponível em: https://www.scielo.org.ar/scielo.php?pid=S185175872015000100008&script=sci_arttext Acesso em: 19 nov. 2024.

RIBEIRO, J.A *et al.* Análise das Condições Higiênico-sanitárias das Unidades de Alimentação e Nutrição das Escolas de um Município no Vale do Ribeira, SP. **Research, Society and Development**, Itajubá, v. 7, n. 8, p. 1-13, abr. 2018. Disponível em: https://www.redalyc.org/journal/5606/560659015004/560659015004.pdf. Acesso em: 19 nov. 2024.

SACCOL, A.L.F *et al.* Importância de Treinamento de Manipuladores em Boas Práticas. **Disciplinarum Scientia**, Santa Maria, v.7, n.1, p. 91-99, 2006. Disponível em: https://periodicos.ufn.edu.br/index.php/disciplinarumS/article/view/906/850. Acesso em: 19 nov. 2024.

SANTOS, V. F.N; ALVES, M.A.A. Unidades de Alimentação e Nutrição no Brasil: Conhecendo o perfil de seus pesquisadores. **Revista Científica Linkania**, São Paulo,v. 1, n. 5, p. 84-99, ago. 2014. Disponível em: https://linkania.org/master/article/view/171/151. Acesso em: 08 set. 2024.

SANTOS, R.P; PALMA, L.M. Doenças Transmitidas Por Alimentos: Aspectos Gerais e Seu Impacto Na Saúde Do Consumidor. **Revista Interdisciplinar do Pensamento Científico**, Campos dos Goytacazes, v. 5, n. 5, p. 995-1005, **dez.** 2019. Disponível em: https://reinpec.cc/index.php/reinpec/article/view/442/363. Acesso em: 10 set. 2024.

STANGARLIN, Lize *et al.* **Instrumentos para Diagnóstico das Boas Práticas de Manipulação em Serviço de Alimentação**. Rio de Janeiro: Rubio, 2013.

SOUZA, L.H.L. A Manipulação inadequada dos alimentos: fator de contaminação. **Revista Higiene Alimentar**, São Paulo, v. 20, n. 146, p. 211-220, nov. 2006.Disponível em: https://www.aedb.br/seget/arquivos/artigos05/42_artigo%20seget.pdf. Acesso em: 15 set. 2024.