



Research on Impact of Food Service Hygiene on Customers' Dining Well-being

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To cite this article:

Li Wenxiong, Huang Yafen, Jinjing. Research on Impact of Food Service Hygiene on Customers' Dining Well-being. *International Journal of Hospitality & Tourism Management*. Vol. 7, No. 2, 2023, pp. 90-96. doi: 10.11648/j.ijhtm.20230702.15

Received: June 14, 2023; **Accepted:** June 30, 2023; **Published:** September 14, 2023

Abstract: Food service hygiene is an important factor that influences the customers' satisfaction. Well-being is a feeling that measures customers' attitude about the life. In order to explore the relationship between food service hygiene and customers' dining well-being, this paper mainly adopts the questionnaire survey method and uses data analysis methods such as correlation and multiple linear regression to do some research. Research has shown that the food service hygiene can affect customers' dining well-being to a certain extent. The score for tableware hygiene increased by 1 point, resulting in a 0.172 point increase in well-being; The score of the body odor of the service personnel increased by 1 point, resulting in a 0.158 point increase in well-being; The service personnel's clothing cleanliness rating increased by 1 point, resulting in a 0.177 point increase in well-being. Based on the study, the research also puts forward some conclusions and suggestions, such as gender factors have no significant influence on customers' dining well-being, regardless of the scale of the enterprise, whether for the sake of customers' eating health or improving the dining experience, our entire food service industry should pay attention to hygiene and provide good health services, so that consumers can experience the well-being brought by eating with peace of mind while enjoying delicious food, thus improving the sense of dining safety and well-being.

Keywords: Food Service, Hygiene, Well-being

1. Introduction

Well-being is a state of life that can be observed and evaluated [1]. With the continuous development of China's social economy, people's living standards have also improved, and people's sense of acquisition and well-being has been significantly enhanced. After the material conditions and quality of life have been greatly improved, people have a higher level of demand for a better life and gradually begin to pursue spiritual and emotional well-being. The 19th National Congress of the Communist Party of China proposed, "To continue to meet the growing needs of people for a better life, so that people's sense of access, well-being and security more abundant, more secure, more sustainable." Relevant studies have found that the experience and needs of a better life are closely related to well-being, acquisition and security [2].

The COVID-19 outbreak in 2020 had a great impact on the food service industry, which suffered serious losses. According to the data released by the National Bureau of Statistics, China's total food service revenue in the first quarter

of 2020 decreased by 44.3% year-on-year, only 602.6 billion yuan. In the past two years, with the decline of the epidemic, catering enterprises have experienced a difficult historical winter and generally reversed the loss situation. According to statistics, in the first quarter of 2023, the total national catering revenue was 1,213.6 billion yuan, a year-on-year increase of 13.9%. It can be seen that consumers are gradually "warming up" when eating out, and catering enterprises have ushered in development opportunities. However, the recovery rate of the food service market is generally slow at present. For catering enterprises, the end of the epidemic is both an opportunity and a challenge.

Nowadays, eating out and traveling is the normal state for people to pursue a happy life. When choosing a restaurant, consumers often consider the factors such as online reputation, their own preferences, food taste, price, service and convenience [3]. After the baptism of the epidemic, people pay more and more attention to food safety and food service hygiene. In this context, this paper will investigate whether food service hygiene has an impact on customers' dining

well-being from the perspective of customers' dining happiness by using a questionnaire survey with the social population as the research object.

2. Literature Review

2.1. Review of Well-being

Well-being is our subjective experience of real life. With the continuous development of social economy and material life, people pay more and more attention to well-being. The discussion of well-being can be traced back to the field of ancient Greek philosophy. There are two main viewpoints in the field of philosophy-the rationalist theory of virtue and the perceptual theory of well-being. Virtue theory emphasizes the pursuit of spiritual well-being by the perfection of one's own virtue, while well-being theory emphasizes the pursuit of well-being and well-being by satisfying people's perceptual desires and needs [4, 5].

In modern times, there have been many studies on subjective well-being in academic circles. Professor Diener, a psychologist, believes that subjective well-being includes personal life satisfaction and emotional experience, and emotional experience includes two parts: positive emotion and negative emotion [6]. This view has been widely recognized by scholars at home and abroad.

In the field of consumption, compared with material consumption, people can have more well-being when they are engaged in experiential consumption such as traveling and eating in restaurants [7, 8].

2.2. Review of Food Service Hygiene

With the rapid development of China's social economy, people's consumption level has improved to a certain extent. At present, traveling and going out for dinner have become the normal state for people to relax and pursue well-being. In today's food service market, how to occupy a place in the market is a problem that every catering operator should think about. Under this market background, a lot of research on food services has emerged.

Nevertheless, on the relationship between service hygiene and consumers in restaurants, most studies focus on customer satisfaction or loyalty. For example, Yasami found that the cleanliness of restaurants, the appearance of service personnel and personal hygiene are two key factors that affect tourists' satisfaction with small restaurants in Thailand [9]. Salam used the theory of planned behavior to analyze the influence of customers' consumption values of Korean high-end restaurants on their behavior. The study finds that the maintenance of flavor, hygiene and service can attract customers to visit restaurants again, and at the same time, when customers receive satisfactory catering services, they will be more willing to recommend these restaurants to people around them, thus improving the publicity effect [10].

In previous scholars' research, service hygiene is one of the main influencing factors, whether it is customer satisfaction or loyalty. As the most basic food service element, service

hygiene has attracted people's attention because it involves food safety issues. Studies have shown that the hygiene of catering service is one of the important influencing factors when consumers choose dining places, and hygiene is more critical than the quality and nutritional value of food. When consumers choose restaurants, they pay more attention to the personal hygiene of catering service personnel and the hygiene of service operation, mainly focusing on the hygiene conditions of personal dress, personal fingernails, equipment and appliances, floors, toilets and so on [11].

Based on the above literature analysis, it can be found that food service hygiene will have an impact on customer satisfaction and consumption behavior. Then, in terms of well-being, whether food service hygiene will also have an impact, and verifying this hypothesis is the main purpose of this study.

3. Research and Design

3.1. Research Methods

In this paper, the form of online electronic questionnaire is used to collect questionnaires, and the questionnaire adopts Likert 5-point scale. In the measurement of well-being, it mainly refers to Ye Xiaoqing's research on the subjective well-being of residents in ethnic tourism communities [12]. The calculation formula of subjective well-being is: subjective well-being = (overall life satisfaction+emotional experience in dining situation) /2, and the emotional experience is set as relaxation, happiness and enjoyment, and the emotional score in dining situation is finally averaged, and the overall life satisfaction is measured by a single question.

3.2. Research Process

This survey was conducted in the form of an online questionnaire. The questionnaire is guided by "Recalling a pleasant dining experience", and its main content has three parts: the first part is demographic information, mainly gender. The second part is the measurement of well-being, which consists of four topics, involving three emotional components and overall life satisfaction. The third part is 14 items of food service hygiene. The survey got 228 valid questionnaires, with a recovery rate of 93.8%, of which 42% were male and 58% were female.

4. Analysis of Questionnaire Results

4.1. Questionnaire Reliability and Validity Analysis

In order to facilitate statistical analysis, this paper uses Q1~Q14 to represent 14 items of food service hygiene. The data analysis results show that the α coefficient of emotional experience item is $0.906 > 0.8$, and the α coefficient of food service hygiene item is $0.878 > 0.8$, which shows that the reliability and quality of the research data are high. $KMO=0.901 > 0.8$, which shows that the validity of the questionnaire is reliable.

Table 1. Reliability Statistics.

Dimension	Cronbach Alpha	Number of terms
Emotional experience	0.906	3
Food service Hygiene	0.878	14

Table 2. KMO inspection.

Inspection item	Numerical value
KMO value	0.901

4.2. Descriptive Statistical Analysis

Table 3. Average score of hygiene items and well-being in food service.

Item	Minimal value	Maximum value	Average value		Standard deviation
	Statistic	Statistic	Statistic	Standard error	Statistic
Life satisfaction	1.00	5.00	3.3553	0.05735	0.86596
Relaxation	1.00	5.00	3.8377	0.05069	0.76543
Happiness	1.00	5.00	3.8289	0.04782	0.72199
Enjoyment	1.00	5.00	3.7807	0.04876	0.73621
Q1	1.00	5.00	3.8904	0.04780	0.72178
Q2	1.00	5.00	3.8596	0.05266	0.79511
Q3	1.00	5.00	3.9167	0.05077	0.76664
Q4	1.00	5.00	3.9868	0.04004	0.60454
Q5	1.00	5.00	3.8947	0.04723	0.71323
Q6	1.00	5.00	4.0395	0.04539	0.68542
Q7	1.00	5.00	3.9868	0.04417	0.66690
Q8	1.00	5.00	3.9518	0.05097	0.76966
Q9	1.00	5.00	3.9254	0.04605	0.69527
Q10	1.00	5.00	3.9825	0.05010	0.75656
Q11	1.00	5.00	3.5439	0.06498	0.98124
Q12	1.00	5.00	3.9825	0.05237	0.79072
Q13	1.00	5.00	3.9342	0.04775	0.72103
Q14	1.00	5.00	3.7807	0.06075	0.91737
Emotional score	1.00	5.00	3.8158	0.04401	0.66460
Sense of well-being	1.00	5.00	3.5855	0.04106	0.61996

Table 4. Correlation analysis of food service hygiene and well-being.

	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Sense of well-being	0.377**	0.172**	0.346**	0.328**	0.338**	0.386**	0.345**

Table 4. Continued.

	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Sense of well-being	0.352**	0.402**	0.313**	0.270**	0.238**	0.354**	0.249**

From the data in Table 3, it can be found that the average life satisfaction of the surveyed sample groups is high, and the average emotional score in dining situation and the average score on food service hygiene perception are all greater than 3.5. It can also be seen from Table 4 that the correlation

between well-being and various items of food service hygiene has reached a significant level, and most of the correlation coefficients are concentrated between 0.3 and 0.4, and there is a significant positive correlation.

4.3. Multiple Regression Analysis

Table 5. Model summary^b.

Model	R	R squared	Adjust r squared	Error of standard estimation	D-W test
1	0.525 ^a	0.275	0.228	0.54488	1.968

Table 6. Analysis of variance of model.

Model	sum of squares	Freedom	Mean square	F	Significance
Return	24.011	14	1.715	5.777	0.000 ^b
Residual	63.238	213	0.297		
Total	87.249	227			

Table 7. Summary of regression analysis.

Model	Non-standardized coefficient		Standard coefficient	t	Significance
	B	Standard error	Bate		
Intercept	1.414	0.293		4.835	0.000
Q1	0.177	0.068	0.207	2.596	0.010*
Q2	-0.103	0.057	-0.132	-1.790	0.075
Q3	0.069	0.068	0.086	1.020	0.309
Q4	-0.094	0.100	-0.091	-0.942	0.347
Q5	0.106	0.073	0.122	1.450	0.148
Q6	0.158	0.078	0.175	2.019	0.045*
Q7	-0.124	0.093	-0.134	-1.331	0.185
Q8	0.063	0.080	0.078	0.785	0.433
Q9	0.172	0.081	0.193	2.116	0.035*
Q10	0.024	0.065	0.030	0.375	0.708
Q11	0.050	0.045	0.079	1.125	0.262

Table 7. Continued.

	Non-standardized coefficient		Standard coefficient	t	Significance
	B	Standard error	Bate		
Q12	0.007	0.054	0.009	0.136	0.892
Q13	0.031	0.075	0.036	0.415	0.679
Q14	0.019	0.048	0.028	0.384	0.701

According to the research hypothesis, food service hygiene will have an impact on customers' dining well-being. At the same time, considering that there may be differences between genders in the perceptions of food service hygiene, emotional experience of dining and life satisfaction, which will affect well-being, this paper also takes gender as a variable into the measurement model, and the regression models obtained are shown in tables 5~7.

After testing and analyzing the regression model, it can be found that the model is significant on the whole from the parameters of $R^2=0.275$, $F=5.777$, $P=0.000<0.05$, that is, the regression model is meaningful. The explanatory power of 14 items of food service hygiene on customers' dining well-being is 27.5%, among which the P values of Q1, Q6 and Q9 are all less than 0.05, reaching a significant level. The other 11 items did not reach the significant level, indicating that these factors are not

strong enough to explain the customer's dining well-being.

4.4. Difference Analysis

In order to test whether gender factors will affect the perception and well-being of food service hygiene in the dining situation, this paper makes the following difference analysis.

4.4.1. The Influence of Gender on Well-being Perception

In view of the research on gender and well-being, this paper uses the independent sample t-test to test the gender differences. From Table 8, it can be seen that the t-value has not reached a significant level, which shows that there is no significant difference in the perception of dining well-being by gender factors.

Table 8. Comparison of emotional experience, life satisfaction and well-being of different gender groups.

	Gender	Average value	Standard deviation	T	Significance
Life satisfaction	Male	3.3854	0.87503	0.448	0.655
	Female	3.3333	0.86198		
Emotional score	Male	3.8715	0.67775	1.080	0.281
	Female	3.7753	0.65446		
Sense of well-being	Male	3.6285	0.62524	0.892	0.374
	Female	3.5543	0.61660		

4.4.2. Influence of Gender on the Perception of Food Service Hygiene

For the study of gender and food service hygiene perception, this paper also uses independent sample T test to test gender differences. As can be seen from Table 9, there is a significant difference in gender factors in Q11, that is, whether public chopsticks and spoons are provided. The data shows:

$3.7604>3.3864$, indicating that male have a slightly higher degree of perception of whether public chopsticks and spoons are provided in restaurants than female. However, the other 13 items did not reach the significant level, indicating that there is no significant difference in gender on the perception of other food services.

Table 9. Comparison of different gender groups' perception of food service hygiene.

Dependent variable	Gender	Average value	Standard deviation	T	Significance
Q1	Male	3.9479	0.71627	1.027	0.305
	Female	3.8485	0.72559		
Q2	Male	3.8854	0.75212	0.417	0.677
	Female	3.8409	0.82730		
Q3	Male	3.9896	0.78800	1.226	0.221
	Female	3.8636	0.74928		
Q4	Male	4.0313	0.67205	0.946	0.345
	Female	3.9545	0.55069		
Q5	Male	3.9375	0.72275	0.771	0.441
	Female	3.8636	0.70735		
Q6	Male	4.0938	0.71197	1.020	0.309
	Female	4.0000	0.66539		
Q7	Male	3.9792	0.73955	-0.144	0.886
	Female	3.9924	0.61155		
Q8	Male	4.0417	0.79361	1.509	0.133
	Female	3.8864	0.74800		

Table 9. Continued.

Dependent variable	Gender	Average value	Standard deviation	T	Significance
Q9	Male	4.0104	0.74685	1.579	0.116
	Female	3.8636	0.65116		
Q10	Male	4.0417	0.76663	1.008	0.315
	Female	3.9394	0.74912		
Q11	Male	3.7604	0.97056	2.888	0.004**
	Female	3.3864	0.96225		
Q12	Male	4.0833	0.74927	1.649	0.101
	Female	3.9091	0.81451		
Q13	Male	3.9896	0.70330	0.989	0.324
	Female	3.8939	0.73368		
Q14	Male	3.8750	0.98675	1.326	0.196
	Female	3.7121	0.86077		

5. Conclusion and Discussion

This survey studies the relationship between customers' well-being in dining and food service hygiene. With well-being as the dependent variable and 14 food service hygiene problems as the independent variables, it takes the form of questionnaire survey to explore whether food service hygiene can affect customers' well-being. After the statistical analysis of the questionnaire data, this study draws the following conclusions:

- (1) In the 228 valid questionnaire samples surveyed, consumers recalled "a pleasant dining experience", and the scores of emotional experience, customer life satisfaction, well-being and other indicators were mostly concentrated between 3.5 and 4, which was above average. The evaluation of 14 food service hygiene problems has also been basically affirmed; There is a significant correlation between well-being and various items of food service hygiene, and the correlation coefficients are all greater than 0 and most of them are concentrated between 0.3 and 0.4, which shows that there is a certain degree of correlation between food service hygiene and customers' dining

well-being.

- (2) In the dining situation, gender factors have no significant influence on customers' dining well-being. From the results of difference analysis, except for the item of "whether public chopsticks and spoons are provided" in food service hygiene, Male's perception of whether restaurants provide public chopsticks and spoons is slightly higher than that of female's, but there is no significant difference between male and female in life satisfaction, emotional experience and other aspects of food service hygiene, that is to say, there is no significant difference between male and female in their sensitivity to service hygiene when eating out. It may be a case that "female are more sensitive to the hygiene of food services than male". Judging from the sample data of this survey, this hypothesis cannot be supported.
- (3) In the further multiple regression analysis, through the regression model, it is found that the explanatory power of 14 items of food service hygiene on customers' dining well-being is 27.5%. Q1, Q6 and Q9, that is, the cleanliness of tableware, the smell of service personnel and the neatness of service personnel's clothing, have the strongest explanation for customers' dining well-being, indicating that the hygiene of food services

affects customers' dining emotional experience to some extent. Every time the score of tableware hygiene increases by 1 point, the customer's well-being will also increase by 0.172 points; Every time the service staff's body odor score increases by 1 point, the customer's well-being will also increase by 0.158 points; Every time the service staff's clothing cleanliness score increases by 1 point, the customer's well-being will also increase by 0.177 points; The other 11 items of food service hygiene did not reach the significant level, which failed to explain well-being. Dishes are the core products of food and beverage outlets. Whether it is the personal hygiene of service personnel or the hygiene of service operation process, it should be a natural obligation. The author found that the unsanitary service behavior of food service personnel will make customers have negative emotional experience during the dining process when visiting individual respondents. For example, in the process of serving food, the direct contact of food with hands without gloves will cause disgust to most customers. Based on this, the author infers that the problem of food service hygiene is more likely to cause consumers' negative emotional experience, and negative emotions should be introduced in the dimension measurement of well-being, and it is impossible to fully interpret well-being simply from the analysis of positive emotions, which may be the main reason why the linear model constructed in this study is not ideal, and the food service hygiene has no obvious explanation for well-being. In addition, the influence of service hygiene on customers' dining well-being may be only one factor. Studies have shown that the service attitude of catering staff, the speed and intonation of service, the service skills, the service speed, the taste and appearance of dishes, the smell in the restaurant room and the noise level of the environment will make customers have positive or negative emotional reactions [13].

To sum up, in the process of customers' dining, the factors affecting customers' emotional experience involve many aspects. This study shows that the service hygiene of food and beverage outlets will indeed affect customers' dining experience and well-being to a certain extent. With the continuous improvement of people's living standard and consumption level, consumer demand is gradually diversified and personalized. For brand catering enterprises with a certain scale and reputation, service hygiene is the basic service guarantee [14]. Haidilao, KFC, McDonald's and other enterprises have done very well in this respect, which has also brought considerable economic benefits and good reputation. For minority restaurants, emerging restaurants and university canteens, service hygiene has still not attracted attention, and health problems are exposed from time to time, which not only harms consumers' diet health, but also brings unpleasant dining experience [15]. Therefore, regardless of the scale of the enterprise, whether for the sake of customers' eating health or improving the dining experience, our entire food service

industry should pay attention to hygiene and provide good health services, so that consumers can experience the well-being brought by eating with peace of mind while enjoying delicious food, thus improving the sense of dining safety and well-being.

6. Shortcomings and Prospects of This Study

The measurement dimension of well-being in this study is not comprehensive enough. In the emotional experience of dining situation, only positive emotions are considered and negative emotions are ignored, while poor food service hygiene may cause more negative emotional reactions of customers. Considering only positive emotions, it is not enough to explain the impact of food service hygiene on well-being. It is necessary to further improve the research design and conduct in-depth research from both positive and negative emotions.

Fund Project

Guangdong Provincial Department of Education Project (2021ZDZX3003); Guangdong Coastal Economic Belt Research Center; Special Project of School-level Talents in Lingnan Normal University (ZW22021); 2022 School first-class curriculum management principles.

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Biography

Huang Yafen (1982-), corresponding author, female, born in Yongzhou, Hunan Province, Ph. D., associate professor, her main research field is Food and Beverage Management.

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