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Health-Related Perceptions of Online Food Delivery Applications among University Students in Rohilkhand Region: A Health Belief Model Based Descriptive Study

Kunwar Ankush Saxena[1*] | Prof. (Dr.) Raj Kamal[2]

[1]Research Scholar, Department of Business Administration, Mahatma Jyotiba Phule Rohilkhand University, Bareilly, Uttar Pradesh.
[2]Professor of Eminence, Department of Business Administration, Mahatma Jyotiba Phule Rohilkhand University, Bareilly, Uttar Pradesh.

[*]Corresponding Author: k.ankushsaxena@gmail.com

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Abstract

The present study is an effort to investigate the perception of university students in Rohilkhand region towards Online Food Delivery Apps like Eternal, Swiggy and other brands offering their services in the region. In a study, university students in UAE and Malaysia who were using OFDAs were found to acknowledge health-related consequences that may come along with the various benefits these food delivery applications offer (Ismail et al., 2024), (Eu & Sameeha, 2021). The students in Rohilkhand region; most of whom are young, are likely to demonstrate a distinct behaviour based on their perception regarding the various aspects of OFDAs. In this descriptive study, through a cross-sectional survey of students in Rohilkhand Region of Uttar Pradesh, the researcher has captured their perception about some important dimensions of the various OFDAs they use. The study focusses to answer 3 important questions, viz. 1. perceived effects of OFDAs on overeating, junk-food consumption and late-night eating. 2. perception of freshness, hygiene, nutritional value, and overall food quality; 3. perceived benefits/harms of OFDA convenience. For this study, the Health Belief Model (HBM) is used as the theoretical lens; which provides the most appropriate constructs required to capture the perception of students in the setup of OFDAs. The constructs of HBM are adapted, and the wording of the (items) questions is modified according to the objectives of this study. The survey was conducted and 231 valid responses were received and used for further analysis. The study found that students perceive OFDAs causing them their poor eating habits and adversely impacting their dietary balance. The study also found that they perceive availability of junk food items on OFDAs as causing harm to their health and indulge them in overeating. The results also revealed concerns around nutritional value of the food options available on online food delivery applications.

Keywords: *Online Food Delivery, Healthy Food, Rohilkhand Region, University Students, Perception, Health Belief Model.*

Introduction

Ever since Online Food Delivery Applications (OFDAs) industry has emerged as a game changer in the way people access, order, and consume food, it has kept researchers interested globally. The various aspects of OFDAs including the factors driving its adoption, perception, usage and outcomes, have been studied across geographies including India and Phillipines (Pandey et al., 2021). Perceptions related to benefits and risks associated with usage of Online Food Delivery Applications and

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their role in shaping the overall attitude and ultimately behavioural intentions of the users have been meticulously studied in India (Gupta & Duggal, 2020). Studies have also been done to understand the role of various factors including trust in shaping the continuous usage of OFDAs by its users (Raza et al., 2022).

Researchers have learnt that the widespread adoption of OFDAs has changed the way modern society eats by providing a never-before-seen kind of convenience and accessibility to a large range of meal options to choose from (Alshahry & Alhazmi, 2026). While a group of studies shows the various functional advantages being offered by such systems, there are studies that have flagged concerns around dietary quality and food hygiene. A study found that such digital platforms inadvertently facilitate the consumption of energy-dense, fast-food items (Sunil et al., 2025). The studies have highlighted that the digitalisation of the restaurant industry has facilitated in doing away with traditional home cooking and has led to an increase in public health challenges linked to obesity and sedentary lifestyles (AlNeyadi & Alneyadi, 2023; Dai et al., 2022).

Following the global trend of increasingmobile food services users (Maulida et al., 2025), there is a remarkable surge in the OFDAs user base in Rohilkhand region. It has been learnt that university students are susceptible to the marketing campaigns of OFDAs where the convenience of getting the food is often highlighted and communicated prominently (Srivastava et al., 2021).The literature also suggests that the convenience of accessing food options and time required for it lead to higher dependency of university students on OFDAs. This brings along with it the risks of suboptimal food choices & nutritional imbalance (Wang et al., 2025).

In the Rohilkhand region, where dietary patterns have changed among university students, it becomes necessary to initiate an enquiry into the perceived health-related implications of using OFDAs by this cohort. The present study describes how perceptions of susceptibility to diseases and other related health barriers manifest in their routine food-related decisions. The study utilizes the Health Belief Model framework to characterize the attitudes of university students towards the nutrition-related implications and potential health-related risks arising out of using OFDAs (Prasad et al., 2025; Yang, 2025).

This study provides a descriptive analysis of how the students in the Rohilkhand region,trade-off between the various benefits OFDAs offer and the perceived potential long-term health consequences of using them (Mehta et al., 2022; Shabu et al., 2025).

Research Questions

Drawing the latent constructs from the Health Belief Model; viz. perceived susceptibility, severity, benefits, and barriers, this descriptive study addresses the following research questions:

RQ1. What is the level of perceived health-related harm associated with online food delivery application use among university students in the Rohilkhand Region?

RQ2. How do students perceive the influence of OFDAs on overeating, junk-food consumption, snacking, and late-night eating?

RQ3. How do students perceive the freshness, hygiene, nutritional value, and overall quality of food obtained through OFDAs?

RQ4. How do students perceive the health-related consequences of the easy availability of OFDAs?

Methodology

This descriptive study was conducted to study perceptions of the various health related aspects of OFDAs amongst university students in Rohilkhand Region of Uttar Pradesh. 247 responses were received from university students in Bareilly, Moradabad and Shahjahanpur districts of Rohilkhand Region. However, thiscross-sectional study includeda final sample of 231 valid responses after weeding out 16 invalid responses as per the exclusion criteria. The predefined inclusion criteria were viz., respondents being older than 18 years of age, enrolled in a university in Rohilkhand Region and having used an OFDA during the previous 3 months. Thus, this study used purposive sampling based on these predefined inclusion criteria.

The study did not attempt to establish any cause-and-effect relationship among the variables studied; instead, it aimed to capture students' perceptions of using any OFDA.

The questionnaire drew its constructs from Health Belief Model (HBM), one of the most revered frameworks when one has to capture perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action.

The constructs conceptualised in this study are the perceived health related attributes associated with Online Food Delivery Applications. The questionnaire had 20 items to capture perceived *health-related harm*, perceived *influence on eating practices*, perceived *healthiness and food quality*& perceived *ability of usersto make healthier choices* while using any OFDA.

The perception items were measured on a 5-point Likert scale, with 1 for Strongly Disagree indicating the lowest level of respondent agreement and 5 for Strongly Agree indicating the highest level of respondent agreement. The data were analysed and interpretedusing descriptive statistics including frequency, percentage, mean and standard deviation. A mean score between 1.00 to 2.33 was considered as a reflection of low level of agreement to the statement. A mean score of 2.34 to 3.66 was considered as a reflection of moderate level of agreement to the statement. Any score between 3.67 to 5.0 was considered as a reflection of high level of agreement to the statement.

Results

For all the four research questions, results have been organised as below using dedicated constructs operationalised in the questionnaire. The composite means were interpreted using the mentioned bands: 1.00–2.33 = low, 2.34–3.66 = moderate, and 3.67–5.00 = high level of agreement.

- The construct *Perceived health-related harm* is operationalised through the following items and was coded as:

Table 1: Item codes for construct *Perceived Health Related Harm*

S. No.	Item	Code
1	Frequent use of OFDAs may make me more likely to gain weight.	H1
2	Regular use of OFDAs may make my diet less balanced.	H2
3	Frequent OFDA use may increase my likelihood of overeating.	H3
4	Regular consumption of food ordered through OFDAs may negatively affect my health.	H4
5	Poor eating habits associated with frequent OFDA use could affect my long-term health.	H5

Table 2: Item level Results of Descriptive Analysis for construct Perceived Health Related Harm

Code	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)	Valid N	Mean	SD	Agreement %	Disagreement %
H1	7 (3%)	30 (13%)	78 (34%)	75 (32%)	41 (18%)	231	3.49	1.03	50%	16%
H2	7 (3%)	33 (14%)	67 (29%)	79 (34%)	45 (19%)	231	3.53	1.05	53%	17%
H3	6 (3%)	41 (18%)	77 (33%)	78 (34%)	29 (13%)	231	3.36	1.00	47%	21%
H4	8 (3%)	45 (19%)	74 (32%)	70 (3%)	34 (15%)	231	3.33	1.06	45%	22%
H5	8 (3%)	20 (9%)	72 (31%)	77 (33%)	54 (23%)	231	3.65	1.04	56%	12%

Table 3: Construct level Results of Descriptive Analysis for Construct Perceived Health Related Harm

Construct	Valid N	Composite Mean	Standard Deviation (SD)
Perceived health-related harm	231	3.47	0.78

The study found that 56% of the respondents perceived that their poor eating habits associated with their frequentuse of online food delivery applications could affect their long-term health.With 3.65 as its mean, this item showed the strongest agreement. 53% of the university students were also found to perceive regular ordering from OFDAs as adversely impacting their diet balance. However, SD of 1.04 and 1.05 respectively for both the items indicated some variation amongst the respondents.

The composite mean score of 3.47 indicated a moderate level of agreement amongst the respondents about OFDAs being perceived as harmful to their health, by them. A composite standard deviation (SD) of .78 indicated a broader consensus amongst the respondents, whereby they perceive OFDAs doing harm to their health.

- The construct *Perceived influence of OFDAs on overeating, junk-food consumption, snacking, and late-night eating* is operationalised through the following items and was coded as:

Table 4: Item codes for construct Perceived influence of OFDAs on overeating, junk-food consumption, snacking, and late-night eating

S. No.	Item	Code
1	OFDAs encourage me to eat more than I normally would.	E1
2	OFDAs make junk food easily accessible to me.	E2
3	OFDAs encourage me to consume snacks between regular meals.	E3
4	OFDAs encourage me to eat late at night.	E4
5	OFDAs make it easier for me to order food even when I am not very hungry.	E5

Table 5: Item level Results of Descriptive Analysis for construct Perceived influence of OFDAs on overeating, junk-food consumption, snacking, and late-night eating

Code	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)	Valid N	Mean	SD	Agreement %	Disagreement %
E1	14 (6%)	56 (24%)	68 (29%)	71 (31%)	22 (10%)	231	3.13	1.08	40%	30%
E2	4 (1%)	27 (12%)	62 (27%)	88 (38%)	50 (22%)	231	3.66	1.00	60%	13%
E3	15 (7%)	55 (24%)	92 (40%)	52 (23%)	17 (7%)	231	3.00	1.01	30%	30%
E4	17 (7%)	52 (23%)	85 (37%)	57 (25%)	20 (9%)	231	3.05	1.06	33%	30%
E5	13 (6%)	28 (12%)	88 (38%)	73 (32%)	29 (13%)	231	3.33	1.03	44%	18%

Table 6: Construct level Results of Descriptive Analysis for construct Perceived influence of OFDAs on overeating, junk-food consumption, snacking, and late-night eating

Construct	Valid N	Composite Mean	Standard Deviation (SD)
Perceived influence of OFDAs on overeating, junk-food consumption, snacking, and late-night eating	231	3.24	0.78

60% of the university students who responded to the survey perceived OFDAs make junk food easily and readily available to them. 44% of those who responded also shared that they perceive OFDAs as making them order food even when they are not hungry. This indicates that OFDAs are perceived as playing a role in making students overeat. The composite mean score of 3.24, indicated OFDAs have a moderately strong perceived influence on making the respondents eat less healthy food. A standard deviation (SD) of .78 was sufficient to indicate a broader consensus among the respondents.

- The construct *Perceived freshness, hygiene, nutritional value, and overall quality of food* is operationalised through the following items and was coded as:

Table 7: Item codes for Perceived freshness, hygiene, nutritional value, and overall quality of food

S. No.	Item	Code
1	OFDAs provide sufficient healthy food options.	Q1
2	It is easy to identify healthier meals on OFDAs.	Q2
3	Food delivered through OFDAs is usually fresh when it arrives.	Q3
4	I believe that food ordered through OFDAs is prepared under hygienic conditions.	Q4
5	Food ordered through OFDAs is generally nutritionally balanced.	Q5
6	The information provided on OFDAs helps me judge the healthiness of food.	Q6
7	The temperature and packaging of delivered food provide confidence about its quality and safety.	Q7

Table 8: Item level Results of Descriptive Analysis for Perceived freshness, hygiene, nutritional value, and overall quality of food

Code	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)	Valid N	Mean	SD	Agreement %	Disagreement %
Q1	12 (5%)	49 (21%)	73 (32%)	64 (28%)	33 (14%)	231	3.25	1.10	42%	26%
Q2	17 (7%)	69 (30%)	85 (37%)	44 (19%)	16 (7%)	231	2.88	1.03	26%	37%
Q3	10 (4%)	34 (15%)	99 (43%)	54 (23%)	34 (15%)	231	3.29	1.03	38%	19%
Q4	13 (6%)	44 (19%)	86 (37%)	66 (29%)	22 (10%)	231	3.17	1.03	38%	25%
Q5	27 (12%)	71 (31%)	83 (36%)	43 (19%)	7 (3%)	231	2.71	1.00	22%	42%
Q6	19 (8%)	58 (25%)	84 (36%)	61 (26%)	9 (4%)	231	2.93	1.00	30%	33%
Q7	10 (4%)	50 (22%)	80 (35%)	66 (29%)	25 (11%)	231	3.20	1.04	39%	26%

Table 9: Construct Level Results of Descriptive Analysis for Perceived freshness, hygiene, nutritional value, and overall quality of food

Construct	Valid N	Composite Mean	Standard Deviation (SD)
Perceived freshness, hygiene, nutritional value, and overall quality of food	231	3.06	0.72

Only 22% of the respondents perceived food ordered through OFDAs as nutritionally balanced. Its mean score of 2.71 indicated just a marginally moderate level of agreement with the fact that food ordered through OFDAs is nutritionally balanced. Just 26% of the respondents were found to perceive that it is easier for them to identify healthier meal options over OFDAs. However, a standard deviation (SD) of 1.03 indicated a certain level of variation amongst the respondents' perceptions.33% of the respondents perceived OFDAs as not providing them enough information to evaluate the healthiness of the food available on their platforms, while a significant 37% of the respondents were found indecisive about it. A mean score of 2.93 indicated a just moderate level of agreement to the fact that OFDAs provide information to help their users evaluate the healthiness of the food they offer.

With a composite mean of 3.06, the perception among the respondents was found as moderately strong.

- The construct *Perceived health-related consequences of the easy availability of OFDA*sis operationalised through the following items and was coded as:

Table 10: Item codes for construct Perceived health-related consequences of the easy availability of OFDAs

S. No.	Item	Code
1	I can choose a healthier meal when ordering through an OFDA.	C1
2	I can avoid ordering junk food when using an OFDA.	C2
3	I can control how often I order unhealthy food through OFDAs.	C3

Table 11: Item level Results of Descriptive Analysis for construct Perceived health-related consequences of the easy availability of OFDAs

Code	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)	Valid N	Mean	SD	Agreement %	Disagreement %
C1	2 (1%)	20 (9%)	65 (28%)	85 (37%)	59 (26%)	231	3.77	0.96	62%	10%
C2	4 (2%)	36 (16%)	79 (34%)	70 (30%)	42 (18%)	231	3.48	1.02	48%	17%
C3	5 (2%)	22 (10%)	84 (36%)	80 (35%)	40 (17%)	231	3.55	0.96	52%	12%

Table 12: Construct level Results of Descriptive Analysis for construct Perceived health-related consequences of the easy availability of OFDAs

Construct	Valid N	Composite Mean	Standard Deviation (SD)
Perceived health-related consequences of the easy availability of OFDAs	231	3.60	0.74

17% of the respondents perceived OFDAs as making them unable to stop order junk food while using their apps. A composite mean score of 3.6 and a lower standard deviation (SD) of .74 indicates that respondents' perception is moderately strong, and the easy availability of food through OFDAs does not create a perception of health-related consequences of using OFDAs.

The highest level of agreement was recorded for C1 (62%; mean = 3.77, within the high-agreement band; SD = 0.96), whereby respondents perceive that even with ease of ordering through OFDAs they can choose healthy food items. The composite mean of 3.60 indicates a moderately strong perception that the ease of ordering does not necessarily translate into adverse health-related consequences or outcomes.

Conclusion

This study found that the university students were aware of the risks associated with the use of OFDAs; however, the data showed that they did not see them as severe.

Perceived health-related harm was found to be highest for long-term consequences and dietary balance. The result echoed the findings of another study done on students in UAE, where the respondents agreed that OFDAs did increase their appetite and food intake (Ismail et al., 2024). Another study (Alshahry & Alhazmi, 2026)being conducted in Gulf region also found that finding healthy food options was seen as difficult by more than 60% of the respondents.

Easy and quick access to junk food was found to play a major role in shaping the perception of OFDAs as influencing overeating and late-night eating amongst the studied cohort. As a study (Ko & Ha, 2024) found that ordering food through OFDAs more than thrice a week was linked to obesity,we can say that the available market data also concur with the findings of this research paper.

The study found its weakest agreement for perceived freshness, hygiene, nutritional value and quality offered through OFDAs. It resonates well with the findings of a study done in Malaysia where they found availability of healthy food items on the OFDAs as a public-health concern (Eu & Sameeha, 2021).

Overall, Rohilkhand students see moderate harm in OFDAs while overestimating their ability to eat healthily through them. The practical lever is better nutritional transparency and healthier supply, not more risk warnings.

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