FACTORS INFLUENCING VIRTUAL AND IN-PATIENT DOCTOR VISITS PREFERENCE AMONG ADULTS IN IJEBU NORTH LOCAL GOVERNMENT AREA, NIGERIA

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Abstract

This study examined factors influencing the preference between virtual and inpatient doctor visits among adults in the Ijebu North Local Government Area, Nigeria. The study employed a descriptive survey of 550 adults, selected through multistage sampling procedure. Four research questions and one hypothesis guided the study. Data were collected through a structured questionnaire and analyzed using t-test, chi-square, and regression. The mean range of the variables 5.43 (0.07) – 7.85 (0.23) indicated demographic characteristic of adults post preference on doctor visits and the purpose of visit in the study location. The result further indicated that there was link between personality-based factors and the preference among adults (R=.768[a], multiple R^2.589, Adj R^2 = .588). Based on this, the study concluded that both personality-based factors (trust, privacy concerns, tech-savviness, and self-efficacy) and demographic elements (age, education, and location) significantly influenced adults' choices between virtual and inpatient doctor visit. In view of the findings, it is therefore recommended that healthcare planners and providers should consider utilization of hybrid model that combines virtual and inpatient services, as well as allowing patients to choose based on convenience, health condition, and personal preferences among others.

Introduction

The scheduled appointment between a patient and a healthcare provider to address health concerns is a **doctor visit.**This scheduled appointment is essential for managing health, both for routine check-ups and for specific medical issues. The influence of technology on this scheduled appointment informed the Virtual and In-Patient Visit. A virtual doctor visit is a scheduled healthcare appointment via information communication technology. The patient consults with a healthcare provider remotely using digital communication technologies, such as video conferencing, telephone, or secures messaging platforms. The utilization of technology differentiates the virtual visit from in-patient visit which is the traditional pattern of healthcare consultation. The traditional pattern permits the patient to schedule appointment with healthcare provider by visiting a healthcare facility in person to consult, receive medical examination, diagnosis, treatment, and other healthcare services, (**Bailey, et al.** 2022; Birk and Kuntz, 2020; Berry and Martin, 2019; Anderson and Lawrence, 2017). Globally, the advancements in technology have revolutionized various aspects of healthcare delivery hence the emergence of virtual healthcare services also known as telemedicine. Its

emergence has potentially addressed longstanding challenges in healthcare access, limited healthcare infrastructure and resources, (Akanbi and Bashshur, 2016). According to Martin, **et al.** (2022); Smith and Thomas (2022); Whitten, **et al.** (2019) the adoption and integration of virtual healthcare services presents unique opportunities and challenges. Though, virtual visits increased healthcare accessibility, reduced travel time, and convenience for patients, but the concerns remain its effectiveness, acceptability, and equity of access, particularly among underserved populations. Additionally, cultural factors, technological infrastructure, and regulatory frameworks may influence the uptake and utilization of virtual healthcare service in the state, (Bokolo, 2021; Ogun State Ministry of Health. 2018; Akanbi and Bashshur, 2016).

Pandemic accelerated the adoption of virtual healthcare services worldwide, including in Nigeria. It underscored the importance of remote healthcare delivery in minimizing exposure to infectious diseases and maintaining continuity of care during public health crises, (Whitten, **et al.** 2019). The impact of virtual care on healthcare access, quality, and health outcomes globally amid pandemic is critical for building resilient and responsive healthcare systems. The evolving healthcare landscape and the increasing role of technology in healthcare delivery, understanding the differential impact of virtual and in-patient visits is essential for optimizing healthcare services, improving health outcomes, and advancing towards universal healthcare coverage among the populace (Bokolo, 2021; Whitten, **et al.** 2019). Ogun State, located in Southwestern Nigeria, faces numerous healthcare challenges, including inadequate healthcare facilities, shortage of healthcare professionals and disparities in healthcare access between urban and rural areas (Ogun State Telehealth Initiative, 2020; Akanbi and Bashshur, 2016). These challenges contribute to suboptimal health outcomes and hinder efforts to achieve universal healthcare coverage in the state. In response to these challenges, there is a growing interest in leveraging technology to improve healthcare delivery and enhance access to medical services.

The study, therefore explored the factors influencing differential utilization of virtual and inpatient doctor visits in Ijebu North Local Government Area, Nigeria.Research consistently underscores virtualvisits enhance healthcare accessibility. For instance, Kruse et al. (2018) found that it significantly improved access for patients in rural and underserved areas by eliminating travel needs. Smith et al (2020) highlighted its effectiveness in bridging geographical gaps, especially in chronic disease management and mental health services. Furthermore, Ekeland **et al.**(2017) and Greenhalgh et al. (2016) also demonstrated its potential to reduce health disparities by providing health services to populations with limited access to healthcare facilities.Despite virtual visits benefits, it cannot fully replace the accessibility offered by in-patient visits for certain populations. For instance, Verghese et al. (2020): Akanbi and Bashshur (2016) noted that in-patient visits provide critical access to immediate physical examinations and interventions, which is particularly beneficial for patients requiring urgent care or complex diagnostic procedures. Ray et al. (2019) also highlighted the importance of inpatient visits for people with disabilities who need physical assistance during consultations. According to Bokolo (2021); Dorsey and Topol (2020), virtual visit deliver high-quality care for many health conditions; especially, when combined with high-definition video and digital health records. However, Totten et al. (2016): Tuckson

et al. (2017) indicated that its effectiveness reduces in situations requiring physical examination. They further pointed out that its clinical efficacy in managing chronic diseases such as diabetes and hypertension is supported by inpatient visit. This was demonstrated by Verghese et al. (2020) that in-patient visits facilitate accurate diagnoses and timely medical interventions, critical for managing acute and complex conditions. In-patient care is often considered the gold standard for quality due to the availability of comprehensive diagnostic tools and immediate treatments. This visit permits direct patient observation, enhancing care quality which is crucial for effective management of multi-morbidity due to the necessity of integrated and coordinated care. Powell et al. (2017) and Lee et al. (2021) established that virtual visit is convenience and reduced travel time of the patient. The patients using it for primary care visits are highly satisfied, appreciating its flexibility and safety of consultations as well as citing ease of use. Koonin et al. (2020) also highlighted that the rapid adaptation and acceptance of virtual health services during pandemic fosters high levels of patient satisfaction. This influences the sustainability health service and its satisfaction. In contrast, Kahana et al. (2020) established that in-patient visits might be less convenient but offer a level of personal interaction that many patients find reassuring.

The in-patient visits provides thorough physical examination and immediate access to additional services for complex health issues through personal interaction and hands-on care which enhance patient satisfaction and perceived quality of care as observed by Sitzia and Wood (2017). The impact of doctor visit on health outcomes varies by condition. Gajarawala and Pelkowski (2021) found that virtual visit is effective in managing chronic diseases and providing mental health services, with improved patient outcomes due to early detection and intervention. But, according to Bashshur et al. (2016), it is less effective for acute conditions requiring immediate physical examination and treatment. Its interventions can lead to similar health outcomes as in-patient visits for managing chronic conditions such as heart failure and chronic obstructive pulmonary disease (COPD) as suggested by Flodgren et al. (2015). According to Reid et al. (2021) the comprehensive diagnostic tools and immediate medical interventions available in in-patient settings lead to better health outcomes for serious conditions due to on-site thorough physical examinations and diagnostic tests. This is highly beneficial for sustainable pediatric care, where physical examinations and immediate interventions are often necessary.Zanaboni and Wootton (2018); Donelan, **et al.** (2019) noted that virtual visit integrated with electronic health records (EHRs) ensure up-to-date and accessible patient information, promoting seamless continuity of care. This improves patient adherence to treatment plans and follow-up schedules due to the convenience and accessibility of virtual consultations as highlighted by Caffery et al. (2017). In-patient visits provide a comprehensive understanding of a patient's health status, essential for creating effective treatment plans. However, maintaining continuity of care requires effective communication and coordination between in-patient and other healthcare services, (Chi et al., 2021; Shore et al., 2018). Therefore, Haggerty et al. (2016) emphasized the importance of integrated care pathways to ensure consistent and continuous care across different settings. Donelan, **et al.** (2019) and Guthrie et al. (2018) further supported the importance of continuity of care in in-patient settings, particularly for patients with complex and chronic conditions. The integration of virtual and

inpatient visits is gaining traction globally, driven by advances in ICT and the need for more accessible healthcare. Virtual breaks the barriers facing inpatient visit while inpatient complement the virtual to foster sustainable health care with outcome, (Tan and Lee, 2021: Deng, **et al.** 2019). It improves accessibility, quality of care, patient satisfaction, cost-effectiveness, health outcomes, and continuity of care but cannot entirely replace in-person visits. While in effective management of chronic conditions and provision of mental health services, inpatient visits remain crucial for immediate physical examinations and managing acute conditions (Reid et al. 2021).

The choice for virtual or in-patient visits is influenced by patient preferences, healthcare needs, technological readiness, and regulatory constraints. In Ogun State, virtual healthcare could expand access to quality care, but challenges like technological infrastructure, digital literacy, and cultural preferences must be addressed, (Deng, **et al.** 2019). Compliance issues, licensing challenges, data protection laws, limited digital connectivity, inadequate equipment, and power supply issues were also highlighted by Reid et al. (2021): Deng**, et al.** (2019). Despite the potential of integrated doctor visit to address healthcare access challenges, there is noticeable variation in the utilization magnitude of virtual and inpatient visit utilization in some communities especially the study location. This hinders informed decision-making and strategic planning for optimizing healthcare delivery in the state. Therefore, the study examined factors influencing doctor visit preference among adults in Ijebu North Local Government Area, Nigeria.

Hypothesis

1. There will be no significant relationship between personality-based factors, virtual and inpatient Doctor Visits preference among adults in Ijebu North Local Government Area, Nigeria.

Methodology

The descriptive survey research was employed for this study. The target population comprised all adults in Ijebu North Local Government Area, Nigeria. The study used a sample size(s) of 550 participants. The participants were selected through multistage sampling procedure. These stages were:

Stage 1: The study location was grouped into ten groups. The groups were Oke-Agbo, Oke-Sopin, Atikori, Ojowo, Japara, Oru, Ilaporu, Awa, Mamu, and Ago-Iwoye. Town was used as a criterion to stratify the study location into the groups used for the study. All the groups were used for the study.

Stage 2: From each group i.e. the town, Convenience Sampling of **Ease-of-Access type was used to select**55 adults from religion centres and market places because they are easy to reach there. This made a total of 550 participants used for the study.

The instrument used for this study was self structured. It was titled "*Differential Doctor Visit Questionaire*, DiDOVQ." This instrument was used to measure factors influencing difference between virtual and inpatient doctor visit. It was a Likert scale with

two sections. Section A elicit personal data of the respondents, while section B contained fourteen (14) items each response option as Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), respondents were required to tick the options that appeals to him/her in the space provided.

After the questionnaire was constructed by the researchers, then, the instrument was reviewed in terms of format and items by the experts in the field of Health Education, Medical Science and Health Information Management. Their suggestions led to the modification of the instrument to suit the focus of the study. This ensured both face and content validity of the instrument.

A test re-test was carried out to determine the reliability of the instrument. The instrument was administered twice on 20 adults outside the study location. Two weeks after the initial administration of the instrument, the instrument was re-administered to the same set of adults and it was carried out in Ibadan, Oyo State. The two set of data collected were subjected to Pearson Product Moment Correlation. The result yielded a coefficient of 0.86. The data collected were coded and analyzed with the aid of Statistical Package for Social Sciences (SPSS) software, to facilitate the analysis. This gave room for thorough examination of the data to draw meaningful conclusions. The research questions were answered with t-test and chi-square while regression was used to test the hypothesis at 0.05 Alpha levels.

Results

After the distribution of the instrument, 540 sorted out were coded and analyzed. This was 98% returned of the instrument.

Research Question 1: Will there be difference in doctor visit based on demographic characteristic of adults in Ijebu North Local Government Area, Nigeria?

Table 1:t-test Analysis of difference in doctor visit based on demographic characteristic of adults

	Variables	Mean	SD	df	t	Sig.
Gender	Male	7.81	0.11			
	Female	6.73	0.34	3	14.53	Sig
Age	Young adult (18-35)	7.51	0.53			
	Adult(36-53)	5.43	0.07	3	12.64	Sig
Educational status	Literate	5.77	0.17			
	Illiterate	7.74	0.31	3	16.42	Sig
Location	Urban	7.85	0.23			
	Rural	6.57	0.33	3	14.26	Sig

Table 1 showed t-test difference in doctor visit based on demographic characteristic of adults in Ijebu North Local Government Area, Nigeria. The mean range of the variable 5.43

(0.07) – 7.85 (0.23) indicated that demographic characteristic of adults show difference in the doctor visits in the study location. The t-test indicates that the difference in doctor visit based on demographic characteristic of adults is significant different at 0.05 level of significant. Based on gender, age, education level and location, there is difference in doctor visit among adults in the study location. The implication is that doctor visits i.e virtual and inpatient doctor visits are not equally utilized in the study location. This was an indication that both are yet to be fully integrated in the study location.

Research Question 2: Will there be difference in the purpose of virtual and inpatient doctor visitsamong adults in Ijebu North Local Government Area, Nigeria?

Table 2: t-test analysis of difference in virtual and inpatient based on the purpose of visitsamong adults

		Mean	SD	df	t	Sig.
Purpose of visits						
Routine Check-Up	Virtual Doctor	6.73	0.34			
	Inpatient Doctor	7.51	0.53	3	12.64	Sig
Sick Visit	Virtual	5.43	0.07			
	Inpatient Doctor	5.77	0.17	3	16.42	Sig
Follow-Up Visit	Virtual Doctor	6.73	0.34			
	Inpatient Doctor	7.51	0.53	3	14.26	Sig
Preventive Care Visit	Virtual Doctor	5.43	0.07			
	Inpatient Doctor	5.77	0.17	3	12.46	Sig
Emergency Visit	Virtual Doctor	6.73	0.34			
	Inpatient Doctor	7.51	0.53	3	16.43	Sig

Table 2 showed t-test analysis of difference in the purpose of virtual and inpatient doctor visit among adults in Ijebu North Local Government Area, Nigeria. The mean range of difference in the purpose of visit 5.43 (0.07) – 7.51(0.23) indicates that there is variation in the purpose of doctor visit among adults in the study location. The t-test indicated that there is significant different at 0.05 level of significant in the purpose of virtual and inpatient doctor visit among adults in the study location. There was difference in the visit for routine check-up, sick, follow-up, preventive care, and emergency care between virtual and inpatient. The implication is that adults mostly use inpatient visits for emergency condition, routine check-up, sick, follow-up, and preventive care been the usual health practice. This is an indication that virtual and inpatient doctor visits are yet to be fully utilized among adults in the study location, and there is impedance to the successful integration of these visits.

Research Questionnaire 3: What are the factors influencing virtual and inpatient doctor visits preference among adults in Ijebu North Local Government Area, Nigeria?

Table 3: Chi-square analysis of factors influencing virtual and inpatient preference

Factors influencing the difference	F (%)	df	X^2	Remark
Literacy	27(5%)	3	21.64	Sig
Rural Divide	27(5%)	3	24.61	Sig
Complexity of Health condition	216(40%)	3	26.44	Sig
Inadequate infrastructure	81(15%)	3	26.14	Sig
Cultural beliefs	27(5%)	3	14.62	Sig
Availability of Care Provider	94(10%)	3	24.16	Sig
Economy	108(20%)	3	26.41	Sig

Table 3 indicated that the factors influencing the virtual and inpatient doctor visits preference among adults in Ijebu North Local Government Area, Nigeria. The percentage factors influencing virtual and inpatient doctor visits preference ranges from 5% - 40%. Literacy, rural divide, and cultural belief have same percentage. The complexity of health condition with 40% has the highest percentage followed by economy and inadequate infrastructure with 20% and 15% respectively. The chi-square established the significance of the factors influencing virtual and inpatient doctor visits preference among adults in the study location. This implied that all the factors identified significantly influenced the preference among adults in the study location.

Research Questionnaire 4: Will there be personality-based factors influencing virtual and inpatient doctor visits preference among adults in Ijebu North Local Government?

Table 4: Chi-square analysis of personality-based factors influencing virtual and inpatient doctor visits preference

Personality-based factors influencing the difference	F (%)	df	X^2	Remark
Tech-Savviness/Self-Efficacy	81(15%)	3	21.64	Sig
Perception	27(5%)	3	24.61	Sig
Privacy/Comfort	108(20%)	3	26.44	Sig
Trust	216(40%)	3	26.14	Sig
Anxiety	27(5%)	3	14.62	Sig
Openness	27(5%)	3	24.16	Sig
Conscientiousness	94(10%)	3	26.41	Sig

Table 4 indicated that there are personality-based factors influencing the virtual and inpatient doctor visits preference among adults in Ijebu North Local Government Area, Nigeria. The percentage of the factors influencing the preference ranges from 5% - 40%.

Perception, anxiety, and openness have same percentage. Trust is 40% which is the highest, followed by Privacy and Comfort,Tech-Savviness/Self-Efficacy, and Conscientiousness. The chi-square established the significance of the personality-based factors influencing the virtual and inpatient doctor visits preference among adults in the study location. This implied that all the personality-based factors identified significantly influence virtual and inpatient doctor visits preference among adults in the study location.

Hypothesis 1: There will be no significant relationship between personality-based factors, virtual and inpatient doctor visits preference among adults in Ijebu North Local Government Area, Nigeria.

Table 5: Analysis on the relationship between personality-based factors, virtual and inpatient doctor visits preference

	Sum of Squares	df	Mean Square	F	Sig.
Regression	154.578	1	154.578	771.625	.000[a]
Residual	107.777	539	.200		
Total	262.355	540			

Table 5 showed that there was relationship between personality-based factors and doctor visits preference among adults (R=.768[a], multiple R^2.589, Adj R^2 = .588). This means that, 37.2% of the variance was accounted for the predictor variables when taken together the significance of the joint was tested at $p < 0.05$. The table also showed that, the analysis of variance for the regression yielded F-ratio ($F_{5, 119}$) = 771.625: $p < 0.05$).This implies that preference for doctors visit was significant and other variables not included in this model accounted for the remaining variance. The hypothesis was therefore rejected. This implied that there was significant relationship between personality-based factors and doctor visits preference among adults in Ijebu North Local Government Area, Nigeria.

Discussion of findings

Table 1 showed that preference in doctor visit based on demographic characteristic of adults is significant in the study location. This is in line with the submission of Jiang et al., (2021) that adults' demographic characteristics notably shape their preferences for virtual against inpatient doctor visits. The finding that gender, age, education level and location influence the preference in doctor visit among adults in the study location, is supported with the assertion of Zhou et al., (2020) that factors such as age, income, education level, and geographic location influence the preference in doctor visit. The study established that age influence the preference of doctor visits among adults. This is in support of Koonin et al., (2021) assertion that younger adults are more inclined toward virtual visits than older adults. This was due to their higher comfort levels with technology and preference for convenience as observed by Odekunle, **et al.** (2018). This finding corroborates the observation of Odekunle, **et al,** (2018) that educational attainment correlates with virtual visit preferences. Highly educated adults tend to adopt virtual visits if readily available due to their confidence

in navigating online health platforms as established by Birk and Kuntz, (2020). Bailey et al., (2022) affirmed that adults with low level of education preferred inpatient visit. Also, location influences the preference of doctor visit in the study location. This is in line with the submission of Adewale and Folorunsho, (2019), Mehrotra et al., (2017) that location influences the preference of doctor visit particularly between urban and rural settings.Table 2 showed significant preference in the purpose of virtual and inpatient doctor visit among adults in the study location. This finding is in line with the assertion of Odekunle, **et al**. (2018) that virtual visits are preferred for routine consultations, minor health concerns, and follow-up appointments. This is also in support of Keesara, et al. (2020) submission that adults prefer virtual visits for health issue that do not require physical examination. Inpatient visits is mostly chosen for issues that require a physical examination as opined by Verhoeven et al., (2021). This is supported with the observation of Mann et al., (2020) that inpatient visits are essential for procedural treatment. Table 3 showed that literacy, rural divide, and cultural belief, complexity of health condition, economy and inadequate infrastructure are significant factors influencing virtual and inpatient doctor visits preference among adults in the study location. This is supported with the observation of Lee and Coughlin, (2020) that preference for virtual or inpatient doctor visits among adults is shaped by structural and social factors. These factors as identified by Verhoeven et al., (2021) includes literacy, rural divide, and cultural beliefs. The rural divide place a substantial preference on doctor visits because rural residents often face limited internet connectivity and fewer healthcare options, and this is a plus for urban residents, as established by Mehrotra et al., (2017), and Lee and Coughlin, (2020).

The cultural beliefs influence on doctors visit preference corroborates Tan and Lee, (2021) submission that cultural beliefs influence preferences because some cultural groups place value on direct and personal interaction with care providers. Such groups do not perceive virtual visit as adequate replacement for inpatient visits as stated by Lee and Coughlin, (2020). Verhoeven et al., (2021) established that complexity of the health condition affects choice of doctor visits. Mehrotra et al., (2017), also established that adults managing complex issues like undiagnosed symptoms or conditions requiring physical examination mostly preferred inpatient visits for comprehensive evaluation Table 4 showed that personality-based factors significantly influenced virtual and inpatient doctor visits preference among adults in the study location. This finding is supported with the assertion of Smith and Thomas, (2022) that psychological factors influenced adults preference for virtual or inpatient doctor visits. Among these factors as identified by Mehrotra et al., (2017) and Koonin, L., et al. (2021) are perception, anxiety, openness, trust, privacy concerns, comfort, tech-savviness, self-efficacy, and conscientiousness. This is also in line with the finding that perception, anxiety, and openness, trust, privacy and Comfort, tech-Savviness/self-efficacy, and Conscientiousness influenced virtual and inpatient doctor visits preference among adults in the study location.

As, Chen, et al. (2021) agreed that perception of healthcare delivery methods strongly shapes preferences, and affirmed further that anxiety influenced choice of doctors visits, adults with health-related anxieties feel more at ease with inpatient visits, where they

receive physical reassurance from the provider through face-to-face and observed body language (Mann et al., 2020).

Openness to new experiences influences adults' acceptance of telemedicine, (Smith and Thomas, 2022). The key predictors of doctors visit preferences as identified by Lee and Coughlin, (2020) are tech-savviness and self-efficacy are key. Trust, alongside privacy and comfort plays a vital role in decision-making on preferred doctor visits as opined by Verhoeven et al., (2021). The finding is also in line with the affirmation of Birk and Kuntz, (2020) conscientious adults select doctors visit types based on a careful evaluation of their health needs and the reliability of the available visits options. Table 5 showed significant relationship between personality-based factors and doctor visits preference among adults in the study location. This is in line with the studies have shown that personality-based factors significantly influence individuals' preferences for doctor visits. The affirmation of **Bailey, et al.** (2022); Anderson and Lawrence, (2017) that personality traits such as conscientiousness, openness, and neuroticism shape health-related behaviours, support this. This also corroborates the assertion of Mehrotra et al., (2017) that traits impact how often individuals seek health care and their preference for healthcare settings.

Conclusion

The study concluded that personality traits and demographic factors strongly influence doctor visit preferences among adults in Ijebu North Local Government Area, Nigeria. Trust, privacy, self-efficacy, and comfort are among the personality-based factors that significantly influence the choice between virtual and inpatient visits. Additionally, socio-demographic variables such as age, education level, and location play a crucial role on choice between virtual and inpatient visits among adults in the study location. The preference for inpatient visits is often linked to complex medical needs and personal interaction, while virtual visits appeal to younger and tech-savvy adults, primarily for routine and follow-up consultations. These findings underscored the need for a hybrid healthcare approach that combines virtual and inpatient services to better cater to diverse preferences and health needs of adults in the study location.Based on the findings of this study, the following recommendations were made:

1. Efforts should be made by individuals and all levels of government through collaboration with internet service provider to improve internet access and technological infrastructure in rural areas to ensure that residents in these regions also benefit from virtual healthcare service.
2. Patient communication outreach should be constantly floated by the government and non-governmental organisations on health issues and technology through media or community approaches.
3. Individual, cooperate and governmental organisation should enhance virtual healthcare by investing in digital healthcare infrastructure to support reliable virtual healthcare services.
4. Public Awareness Campaigns should be conducted to inform the public about the benefits and accessibility of virtual healthcare. This addresses trust and privacy concerns to build confidence in virtual visits.

5. Individual and government should provide digital literacy programmes through mass media to enhance self-efficacy among adults, particularly older individuals, to facilitate virtual healthcare adoption.
6. Healthcare planners and providers should consider utilization of hybrid model that combines virtual and inpatient services, as well as allowing patients to choose based on convenience, health condition, and personal preferences.

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