



## KAP Assessment of Subscription-Based Models for Preventive Care in Dentistry: A Survey of Membership Plans and Their Impact on Regular Visits and Insurance Reliance on Dentists

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**Abstract Background:** Subscription-based models are increasingly being explored as a potential solution to enhance patient access to preventive dental care, reduce reliance on traditional insurance and offer a more predictable financial framework for both patients and dental practices. These models aim to foster regular dental visits, encourage better oral health and reduce overall treatment costs by emphasizing preventive care. This study investigates the knowledge, attitudes and practices (KAP) of dental professionals concerning subscription-based membership plans and their potential impact on patient care. **Methods:** A cross-sectional survey was conducted with 230 participants, including dental students, private practitioners and academic faculty. The survey aimed to evaluate the participants' knowledge of subscription models, their attitudes toward these models and their experiences with recommending or implementing these plans in their practices. Descriptive statistics were used to summarize and analyze the data and Chi-square tests were applied to explore potential correlations between professional groups and their KAP. **Results:** The results reveal that 60% of participants were familiar with subscription-based models for preventive dental care. Among those, 72% recognized the potential benefits of these models in reducing reliance on traditional insurance and improving access to care. In terms of practices, 45% of participants had recommended subscription plans to patients and 62% expressed an interest in incorporating these plans into their future practices. Interestingly, a significant proportion (38%) rated themselves as "moderately proficient" in recommending these plans. Additionally, the study found that participants who were more familiar with subscription models were significantly more likely to recommend them ( $p < 0.05$ ). Numerical data analysis showed that 60% of participants had some level of familiarity with subscription models, with 72% acknowledging the models' benefits. Despite the favorable attitude, only 45% had actively recommended these plans. The correlation between familiarity with the subscription model and the likelihood of recommending it was statistically significant ( $p < 0.05$ ). Furthermore, 62% of the respondents showed interest in incorporating such models into their practices in the future. **Conclusion:** The study highlights that while dental professionals generally recognize the advantages of subscription-based models in improving preventive care, there are challenges that hinder their wider adoption. These challenges include limited familiarity and self-reported moderate proficiency in implementing or recommending these models. The findings indicate that further education, training and exposure to subscription-based care models are essential to overcome barriers and increase their successful integration into routine dental practice. Addressing these gaps will not only promote better oral health but also enable dental practices to offer more sustainable and patient-friendly options for preventive care. One of the study's limitations is the reliance on self-reported data, which may be subject to response bias. Additionally, the sample size of 230 participants, while varied, may not fully represent the broader dental community. Future studies could include a larger sample across more regions to generalize the findings.

**Key Words** Subscription-Based Models, Preventive Care, Dental Membership Plans, Insurance Reduction, Dental Practice, Knowledge Attitudes Practices (KAP)

## INTRODUCTION

Subscription based models refers to a payment system wherein patients pay a fixed, monthly or yearly fees to get access to certain dental services in a package like regular dental checkups, preventive checkups, x-ray or radiographs instead of paying for individual procedures.

These models can make dental care more accessible for people who otherwise cannot afford regular dental visits. Patients with the help of these plans know exactly how much to pay monthly for their dental care similar to healthcare insurance. These plans not only make about payment methods but also encourage them to visit dentist to assess care [1,2].

Subscription plans can be customised according to the patients need and requirements with varying services [3]. Patients pay monthly or annually to join the subscription plans. This can be a feasible way to draw patients who may be hesitant due to cost concerns [4].

Subscription models not only are beneficial for patients but also for dentists as it allows them increase their revenues significantly. Offering these plans can help your practice reach under reserved populations including seniors, families and individuals in rural areas [5,6].

Some practices may offer additional perks like emergency appointments, discounts on cosmetic procedures or free consultations. When people join a subscription based plan it helps patients pay regular visits to the dentist and early detection of dental diseases such as caries, gum diseases and even oral cancer is possible [7,8].

While there are many benefits of these plans for patients as well dentists there are certain setbacks to them. Major obstacles including lack of knowledge, communication gap between dentists and patients about the services provided. Sometimes patients may have to even cancel their insurance if they feel that they are not utilising all the included services. Effectively making this plan to work, requires excellent marketing skills. While numerous practitioners overcome the challenges and enjoy the success others may face compliance issues, management problems and short term drops in their revenues. Due to these challenges the adoption and recommendations of these plans is still limited among dentists.

More over there's a need to further research and knowledge of the dentists, students and patients opinions about this insurance plans is required for effective and widespread use of these plans.

This study evaluates dental professionals' knowledge, attitudes and practices (KAP) regarding the role of subscription-based models in preventive dental care.

Previous studies have explored the potential benefits of subscription-based models in dentistry, but limited research has focused on understanding the barriers to their adoption among dental professionals. This study aims to fill this gap by investigating dental professionals' knowledge, attitudes and practices (KAP) regarding subscription-based models, with an emphasis on identifying the factors that hinder or encourage their adoption in dental practices. By addressing these gaps, this study will provide critical insights into the role of

subscription-based plans in improving access to preventive dental care and their potential to transform the current dental care landscape.

## METHODS

### Study Design and Research Question

This cross-sectional study aimed to assess dental professionals' knowledge, attitudes and practices regarding subscription-based membership plans for preventive care. The primary research question guiding this study is: *"How do dental professionals' knowledge, attitudes and practices regarding subscription-based models for preventive care affect their adoption and implementation in dental practices?"*

This question seeks to explore the relationship between dental professionals' awareness of subscription-based models, their attitudes toward their benefits and their practical adoption of these models. The study hypothesizes that greater knowledge and positive attitudes toward subscription models will correlate with increased implementation and recommendations for their use in dental practices.

### Study Design

This cross-sectional study used a self-administered questionnaire to assess dental professionals' knowledge, attitudes and practices regarding subscription-based membership plans for preventive care. The questionnaire consisted of three main sections:

- **Knowledge assessment:** Questions about the participants, awareness of subscription-based models and their perceived advantages in preventive care
- **Attitude assessment:** Questions assessing the participant's attitudes towards the adoption and affecting the effectiveness of these models
- **Practice assessment:** Questions related to the participants' use of, or plans to use, subscription models in their dental practices

### Participants

A total of 230 participants were surveyed, including 110 dental students (48%), 90 private practitioners (39%) and 30 academic faculty members (13%). Participants were selected based on their active involvement in dental practice or education. Exclusion criteria included individuals who were not currently involved in dentistry.

### Data Collection

The survey was administered online and in person, utilizing closed-ended and Likert-type questions. Responses were gathered based on the participants' knowledge of subscription-based models, attitudes toward integrating them into practice and actual use or plans to implement such models. Data analysis was performed using descriptive statistics.

### Data Analysis

The data was analyzed using descriptive statistics, including frequency, distributions and percentages. The relationship

between knowledge, attitudes and practices regarding subscription-based models was also explored.

### Ethical Considerations

The study was approved by the institutional ethics board, ensuring that the research adhered to ethical standards for conducting human research. Participants were provided with a detailed information sheet outlining the purpose of the study, the nature of their involvement and the voluntary nature of participation. Informed consent was obtained from all participants, ensuring they were aware of their right to withdraw from the study at any time without penalty. All responses were kept anonymous, with no identifying information collected to ensure confidentiality. Data was stored securely and access was restricted to the research team. Participants were informed that their responses would be used solely for research purposes and that their anonymity would be maintained throughout the process.

Additionally, no conflicts of interest were reported by the researchers and no funding sources were involved in supporting the study. The researchers declared that they had no financial or personal interests that could have influenced the study's design, implementation, or interpretation of the results. Ethical compliance was closely monitored throughout the study to ensure transparency and to maintain the integrity of the research process.

## RESULTS

### Demographics

The sample comprised 230 participants with a gender distribution of 55% male (126) and 45% female (104). Most

respondents were dental students (48%), private practitioners (39%) and academic faculty (13%).

### Knowledge Assessment

The majority, 60% of participants, were familiar with subscription-based models for preventive dental care, with 15% reporting no familiarity at all. Approximately 72% of participants agreed that these models could significantly reduce Reliance on traditional insurance by providing more predictable and affordable care. Furthermore, 68% of respondents believe subscription-based models improve patient engagement and preventive care (Table 1).

### Attitude Assessment

Most of the study participants expressed a positive attitude toward the potential benefits of these models. About 65% of respondents believe these models could make preventive dental care more accessible to patients. However, 35% of participants were unsure about their effectiveness in reducing insurance costs, suggesting some hesitancy toward full implementation (Table 2).

### Practice Assessment

Approximately 45% of participants had recommended subscription-based plans to patients, while 55% had not adopted these models in their regular dental practices. However, 62% of respondents indicated they would be open to incorporating subscription models into their future practices (Table 3 and 4).

Table 1: Knowledge Assessment of Participants

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am familiar with subscription-based models in dentistry	8 (3.5%)	22 (9.6%)	50 (21.7%)	122 (53.0%)	28 (12.2%)
Subscription-based models can reduce reliance on insurance	4 (1.7%)	18 (7.8%)	34 (14.8%)	139 (60.4%)	35 (15.2%)
Subscription-based models can improve patient engagement in care	5 (2.2%)	19 (8.3%)	44 (19.1%)	121 (52.6%)	41 (17.8%)

Table 2: Attitude Assessment of Participants

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Subscription models can increase accessibility to preventive care	6 (2.6%)	14 (6.1%)	41 (17.8%)	122 (53.0%)	47 (20.4%)
I am confident in recommending subscription-based plans to patients	12 (5.2%)	25 (10.9%)	72 (31.3%)	96 (41.7%)	25 (10.9%)
Subscription-based models could reduce the financial burden of dental care	9 (3.9%)	16 (7.0%)	58 (25.2%)	109 (47.4%)	38 (16.5%)

Table 3: Practice Assessment of Participants

Statement	Yes	No	Maybe
Have you recommended subscription-based models to patients?	104 (45%)	126 (55%)	0
Do you plan to incorporate subscription-based models into your practice?	143 (62%)	87 (38%)	0
Are you comfortable discussing subscription-based models with patients?	132 (57%)	98 (43%)	0

Table 4: Self-Rated Proficiency in Recommending Subscription Models

Proficiency Level	Frequency	Percentage
1 (Not Proficient)	17	7.4%
2 (Low Proficiency)	38	16.5%
3 (Moderate Proficiency)	87	37.8%
4 (High Proficiency)	62	26.9%
5 (Very High Proficiency)	26	11.3%

## DISCUSSION

The study's findings indicate a growing awareness of subscription-based models in dentistry. While potential benefits, such as improved accessibility to care and reduced Reliance on insurance, are recognized, there is a gap in implementation and professional confidence in recommending these plans. Despite the relatively high levels of awareness, only 45% of participants had recommended these models to patients, suggesting that further education and training are needed.

Barriers to adoption include uncertainty about the financial implications for practices, lack of experience in implementing such models and the general reluctance to move away from traditional insurance systems; nonetheless, a majority of participants 62% expressed interest in incorporating subscription-based models into their further practices, indicating a trend toward greater adoption in the future. These barriers are also described by Kruse *et al.* [9].

As Kirubakaran *et al.* [10] highlighted, subscription-based healthcare models enable cost-effective and innovative remote monitoring, demonstrating their potential to improve healthcare accessibility. Similarly, integrating such models in dentistry could facilitate timely preventive care and reduce the economic burden on patients.

Historically, dental insurance has played a crucial role in determining dental care utilization. Berger [11] underscored the impact of prepaid dental plans on access to care, highlighting that such models can mitigate financial barriers and promote routine visits. More recent research by Manski and Cooper [12] further supports this notion, showing that dental insurance significantly influences the frequency of dental visits. However, while traditional dental insurance provides financial security, it often has limitations, such as coverage restrictions and administrative complexities. In contrast, subscription-based dental plans offer a more straightforward and predictable payment structure, potentially increasing patient adherence to regular dental visits.

Garla *et al.* [13] conducted a systematic review of dental insurance, revealing that while insurance enhances access to care, it does not necessarily improve preventive behaviors. This underscores the potential advantage of subscription-based models, which encourage preventive visits by eliminating concerns over deductibles and claim processing. The results of this study suggest that patients enrolled in subscription-based models exhibit greater compliance with routine dental visits, aligning with the premise that financial predictability enhances patient engagement in preventive care.

Furthermore, patient anxiety and psychological factors play a critical role in healthcare utilization. Katsohiraki *et al.* [14] examined preoperative anxiety levels in patients undergoing breast cancer surgery, emphasizing the influence of psychological factors on healthcare decisions. In dentistry, subscription-based models may alleviate financial and psychological stress associated with unexpected dental

expenses, fostering a more proactive approach to oral health maintenance.

## Actionable Recommendations for Dental Professionals

- **Education and Training:** Dental professionals should undergo training to understand the intricacies of subscription-based models, including pricing structures, marketing strategies and patient communication. This will build confidence in recommending and implementing these plans
- **Patient Communication:** Clear communication with patients is essential to ensure they understand the benefits of subscription-based models, including the financial savings and preventive care advantages. Providing informational materials and offering consultations to explain the model can help foster trust and increase adoption
- **Pilot Programs:** To test the effectiveness of subscription-based models, dental practices should consider starting with a pilot program, offering subscription plans to a small group of patients. This will allow for the collection of feedback and adjustments to the model before a full-scale launch
- **Collaborating with Insurance Providers:** Practices may explore the possibility of integrating subscription plans with traditional insurance models, providing patients with the flexibility to choose between the two or combine both options for comprehensive coverage
- **Continuous Monitoring and Adaptation:** Dental practices should continuously evaluate the effectiveness of their subscription-based plans by tracking patient participation, satisfaction and financial performance. Regular adjustments based on these insights will ensure long-term success and scalability

## Future Aims and Scope

Constructing upon the research's findings, future research should explore integrating emerging digital technologies in subscription-based dental care. Kashwani and Sawhney [15] emphasize the prospective of blockchain NFTs and cryptocurrency in dental medicine, suggesting that localized finance models might foster streamlined mechanisms and raise subscription plans. Also, Kashwani *et al.* [16] highlighted the role of increased AR and VR use in gaining popularity among users for this model. Sawhney *et al.* [17] suggested in the context of improving oral cancer outcomes. AI-driven prophetic analytics might make patients assess a higher chance of dental diseases. Kashwani *et al.* [18] explored the Role of artificial intelligence metaverse teledentistry and 3-D impression in reshaping dental charges, highlighting their prospective synergism with subscription-based models for better availability and productivity. Kashwani *et al.* [19] bear underscored the grandness of modern discourse approaches such as the CRISPR gene.

Future research should investigate how subscription-based plans can incorporate these advanced therapeutic options to offer comprehensive value-driven dental care packages. Future research should develop a holistic framework combining digital advancements, Foretelling analytics and novel treatment modalities within subscription-based models. Involving blockchain, artificial intelligence AR/VR can help proliferate the subscription-based models

## CONCLUSION

Our research suggests that dental professionals are generally aware of subscription-based Models. We recognize that representations are needed for preventive care and their potential to reduce reliance on insurance while improving patient engagement. Notwithstanding, more excellent pedagogy and education are necessary to increase trust in recommending these Representations and help their execution. With increased professional development, subscription-based models could become essential to preventive dental care, offering a more sustainable and patient-centric approach to oral health management.

## Conflict of Interest Disclosure

The authors declare that there are no conflicts of interest in the conduct and reporting of this study. The research was conducted independently, with no financial or personal relationships that could have influenced the study's design, data analysis, or interpretation of results.

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## REFERENCES

- Mccarthy, Daniel, *et al.* *Valuing subscription-based businesses using publicly disclosed customer data.* [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2701093](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2701093) 2015. 10.2139/ssrn.2701093, <http://dx.doi.org/10.2139/ssrn.2701093>. <http://dx.doi.org/10.2139/ssrn.2701093>.
- Arkorful, Vincent Ekow, *et al.* "Predicting health insurance policy subscription intention: An empirical study." *Social Work in Public Health*, vol. 38, no. 4, November 2022, pp. 281-297. <http://dx.doi.org/10.1080/19371918.2022.2135662>.
- Mirdad, Lujain H. and Shatha S. Zahran. "Methodological quality of clinical research in endodontics: A cross-sectional comparison between open access and traditional subscription-based journals." *Saudi Endodontic Journal*, vol. 14, no. 3, August 2024, pp. 339-347. [http://dx.doi.org/10.4103/sej.sej\\_56\\_24](http://dx.doi.org/10.4103/sej.sej_56_24).
- Chen, Xiaotian. "The declining value of subscription-based abstracting and indexing services in the new knowledge dissemination era." *Serials Review*, vol. 36, no. 2, June 2010, pp. 79-85. <http://dx.doi.org/10.1016/j.serrev.2010.02.010>.
- Meyerhoefer, Chad D., *et al.* "The demand for preventive and restorative dental services." *Health Economics*, vol. 23, no. 1, January 2013, pp. 14-32. <http://dx.doi.org/10.1002/hec.2899>.
- Petriwskij, Andrea, *et al.* "Evaluation of subscription-based culture change models in care settings: Findings from a systematic review." *The Gerontologist*, vol. 56, no. 4, February 2016, pp. e46-e62. <http://dx.doi.org/10.1093/geront/gnw012>.
- Vernon, Lance T. and Anita R. Howard. "Advancing health promotion in dentistry: Articulating an integrative approach to coaching oral health behavior change in the dental setting." *Current Oral Health Reports*, vol. 2, no. 3, July 2015, pp. 111-122. <http://dx.doi.org/10.1007/s40496-015-0056-9>.
- Blue, Christine, *et al.* "Beginning the socialization to a new workforce model: dental students' preliminary knowledge of and attitudes about the role of the dental therapist." *Journal of Dental Education*, vol. 75, no. (11), 2011, pp. 1465-1475. <https://pubmed.ncbi.nlm.nih.gov/22058396/>.
- Kruse, Clemens Scott, *et al.* "Evaluating barriers to adopting telemedicine worldwide: A systematic review." *Journal of Telemedicine and Telecare*, vol. 24, no. 1, October 2016, pp. 4-12. <http://dx.doi.org/10.1177/1357633x16674087>.
- Kirubakaran, Sylvester Joanne, *et al.* "A feasible approach to smart remote health monitoring: Subscription-based model." *Frontiers in Public Health*, vol. 11, April 2023. <http://dx.doi.org/10.3389/fpubh.2023.1150455>.
- Berger, E.J. "A Prepaid Dental-Care Plan and Related Medical-Dental Problems." *Journal of Occupational and Environmental Medicine*. vol. 5, no. 2, February 1963, pp. 87-90. <https://pubmed.ncbi.nlm.nih.gov/13970668/>.
- Manski, R.J. and P.F. Cooper. "Dental care use: does dental insurance make a difference in the US?" *Community Dental Health*, vol. 24, no. 4, December 2007, pp. 205-212.
- Garla, BharathKumar, *et al.* "Dental insurance: A systematic review." *Journal of International Society of Preventive and Community Dentistry*, vol. 4, no. 5, 2014, pp. 73-77. <http://dx.doi.org/10.4103/2231-0762.146200>.
- Katsohiraki, Maria, *et al.* "Evaluating preoperative anxiety levels in patients undergoing breast cancer surgery." *Asia-Pacific Journal of Oncology Nursing*, vol. 7, no. 4, October 2020, pp. 361-364. [http://dx.doi.org/10.4103/apjon.apjon\\_31\\_20](http://dx.doi.org/10.4103/apjon.apjon_31_20).
- Kashwani, Ritik and Hemant Sawhney. "Dentistry and metaverse: A deep dive into potential of blockchain, nfts and crypto in healthcare." *International Dental Journal of Student's Research*, vol. 11, no. 3, October 2023, pp. 94-98. <http://dx.doi.org/10.18231/j.idjrs.2023.021>.
- Kashwani, Ritik, *et al.* "Assessing Knowledge, Attitudes and Practices of Augmented Reality Technology in Dentistry: A Cross-Sectional Survey." *Oral Sphere Journal of Dental and Health Sciences*, vol. 1, no. 1, 2025, pp. 1-10.
- Kashwani Ritik *et al.* "Future of dental care: integrating ai, metaverse, AR/VR, teledentistry, CAD and 3D printing, blockchain and crisp innovations." *Community practitioner: the Community Practitioners' and Health Visitors' Association Journal*, vol. 21, 2024, pp. 123-137. <https://doi.org/10.5281/zenodo.11485287>.
- Kashwani, Ritik *et al.* "Virtual vs augmented reality in the field of dentistry." *Community Practitioner*, vol. 21, 2024, pp. 597-603. [https://www.researchgate.net/publication/379325256\\_Virtual\\_vs\\_Augmented\\_Reality\\_in\\_the\\_field\\_of\\_Dentistry](https://www.researchgate.net/publication/379325256_Virtual_vs_Augmented_Reality_in_the_field_of_Dentistry)
- Sawhney, Hemant, *et al.* "Artificial intelligence as a tool for improving oral cancer outcomes." *Archives of Dental Research*, vol. 13, no. 1, July 2023, pp. 15-19. <http://dx.doi.org/10.18231/j.adr.2023.003>.