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Motivational factors influencing radiography students' career choices: A survey study

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Abstract:

BACKGROUND: Despite significant advancements in healthcare in the United Arab Emirates (UAE), limited research has explored the motivational factors influencing UAE radiography students' choice of this field.

MATERIALS AND METHODS: Institutional using a cross-sectional survey, to explore motivational factors influencing career decisions among UAE radiography students. It was conducted in 2023 and involved 100 students from four universities across the UAE. Nonprobability sampling, including convenience and snowball methods, was used. Data were collected through an online questionnaire validated through expert reviews and pilot testing. The analysis involved descriptive and inferential statistics using SPSS software to assess demographic characteristics and career motivation factors.

RESULTS: The findings of this study demonstrate that the primary reason for choosing diagnostic radiography as a profession was primarily due to their interest in medical imaging technology (47%). Additional motivations included job availability (18%), personal interest, and high-income potential (14%). Most participants (40%) expressed satisfaction with their career choice and an interest in further education. Further training in ultrasound or nuclear medicine was desired by 17%, and both magnetic resonance imaging (MRI) and computed tomography (CT) by 23%.

CONCLUSION: The appeal of diagnostic radiography arises from a combination of interest in advanced imaging technologies, such as MRI and CT, alongside promising career prospects and opportunities for specialization. Targeted early career guidance and well-structured educational and policy interventions are essential to attract and retain skilled professionals. These measures are critical for sustaining the UAE's healthcare sector's growth and provide a replicable model for advancing diagnostic radiography in other regions.

Keywords:

Motivation, profession, radiography, students' career

Introduction

Healthcare demands in the United Arab Emirates (UAE) have risen considerably. An increase in healthcare facilities, shifts in immigration rates, and rising incidences of cancer and cardiovascular diseases have created challenges in recruiting and retaining proficient radiography graduates.^[1] Cultivating a dedicated cohort of radiographers committed to a healthcare

career is paramount, particularly in light of the challenges of vacancy rates. This need is underscored by the anticipated growth of the medical imaging services sector in the UAE, which is projected to expand at a compound annual growth rate of 5.9% from 2022 to 2030.^[2-5] The UAE typically offers educational pathways for diagnostic radiographers, culminating in a Bachelor of Science (BSc) degree. These programs are meticulously structured to integrate theoretical education with immersive

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clinical placements. As a result, the role of Higher Education Institutions in the UAE is critically important, as they are responsible for designing curricula that impart essential competencies to students while adhering to regulatory standards set by authoritative bodies such as the Commission for Academic Accreditation^[5] and the Professional Qualifications Register,^[6] ensuring alignment with the standards of Proficiency for Radiographers.^[7]

To improve the attractiveness and effectiveness of educational and training programs for future radiography students, it is crucial to understand the factors that motivate students to choose a career in diagnostic radiography. Academic institutions can design programs that align with students' interests and aspirations and support their professional growth and development by comprehending what motivates students to pursue this profession. Also, knowing motivation factors can help policymakers and healthcare organizations find and keep radiographers, which will help the UAE's healthcare industry grow. In recent years, the UAE has made significant progress in healthcare, and radiography is one of the fastest-expanding fields.^[8] The demand for professionals in this field will rise in the coming years. However, more research needs to be done on the factors that motivate UAE radiography students to pursue a career in diagnostic radiography, especially considering the current shortage of students in radiography programs. Published literature has examined various factors influencing students' choice of profession in diagnostic radiography.

Studies from the United Kingdom and Ireland have shown that the most significant motivational factors when considering career decisions in diagnostic radiography were lifestyle and career development.^[9,10] Several factors are statistically linked to career indecision, notably active engagement in career development initiatives. Involvement in curricular and extracurricular career development programs and counselling can mitigate career indecision.^[9] Although existing studies from other countries provide valuable insights into factors influencing career choices in healthcare, they may need to be fully generalizable to the UAE context due to cultural, educational, and economic differences. For instance, the UAE's unique demographic composition, with a high proportion of expatriates and a rapidly evolving healthcare sector, creates distinct opportunities and challenges not observed in other settings. In addition, societal expectations, healthcare policies, and the structure of medical education in the UAE differ significantly from those in Western or other Middle Eastern countries, necessitating context-specific research to better understand and address these factors.^[11]

While limited literature exists regarding the determinants shaping radiography students' career trajectories,^[9] it is acknowledged that a spectrum of factors, including gender, familial influence, lifestyle preferences, and personality traits, may yield significance.^[12] In addition, evidence suggests that financial incentives, societal status, and external perceptions are pivotal in shaping decisions about professional specializations.^[9] Furthermore, educational exposures^[13] impact specialty selection.^[14] Nevertheless, the extent to which radiography programs impact students' decision-making processes and their provision of short- or long-term career planning guidance remains to be determined. Thus, this research paper aims to determine the motivating factors that encourage UAE radiography students to pursue a career in diagnostic radiography. The discoveries of this study can highlight and guide organizations and policymakers in configuring programs that can enhance the development of the medical services industry in the UAE. This study aims to identify the motivational factors that influence UAE radiography students to choose diagnostic radiography as a profession.

Materials and Methods

Study design and setting

This study used a cross-sectional survey approach, conducted online, to examine the motivating variables affecting career choices among radiography students in the UAE. Participants were sourced from four colleges that provide medical imaging programs in the UAE. The participant information sheet explicitly delineated the study's objective. The inclusion criteria targeted individuals currently enrolled in radiography programs at multiple colleges in the UAE. The exclusion criteria encompassed students not enrolled in radiography programs.

Study participants and sampling

A power analysis using Cohen's formula (1992) indicated that a sample size of 100 would provide an 80% probability of detecting correlations at a significance level of $P < 0.05$. Subsequently, the survey included a diverse cohort of 100 out of 470 UAE radiography students from various universities across the UAE. The survey was distributed to all radiography students in the UAE and remained open until the target number of participants was achieved. Data were collected from four out of the five universities offering medical Imaging programs in the UAE. Approximately 33% of the respondents were affiliated with University 1, while 25% participated from University 2. In addition, 25% of respondents were enrolled at University 3, and the remaining 17% represented University 4, all offering medical imaging programs in the UAE.

Data collection tool and technique

Questionnaire

A structured online questionnaire was developed using Google Forms (Google Inc, Mountain View, CA) following a comprehensive literature review, focusing on the motivational factors influencing the career decisions of radiography students. Participants were recruited using non-probability sampling techniques, including convenience and snowball sampling methods. The questionnaire primarily consisted of 15 questions in multiple-choice, yes/no, and fill-in-the-blank formats, allowing participants to furnish additional reasons in specific questions. Specifically, it sought to determine whether participants had chosen diagnostic radiography as their intended career path, with affirmative responses guiding their inclusion in the study. Their experiences concerning motivational factors shaping career choices were carefully examined. The survey remained accessible for eight weeks, allowing participants ample time to complete the questionnaire at their convenience.

This was followed by a pilot study to improve the tool's validity. The pilot study helped identify and address any issues with the questionnaire, resulting in more evident findings for the main study.

Validation

The questionnaire underwent a two-phase validation process^[15]; in the first phase, three academic radiographers, each with over 15 years of experience in teaching medical imaging, reviewed the survey tools and questions. The second validation phase involved face validation, which included the participation of five volunteer medical imaging students. The Content Validity Index (CVI) was employed to evaluate the validity of the research instrument, ensuring the relevance and reliability of the job satisfaction tool concerning job performance. The CVI results demonstrated high content validity. In addition, the Face Validity Index (FVI) was calculated to validate the survey tool by assessing whether the questions effectively measured social determinants of health, confirming their appropriateness and relevance to the study's objectives at first glance.^[16-19] The questionnaire showed item-level Content Validity Index (I-CVI) and item-level Face Validity Index (I-FVI) scores above 0.81 for both indices, indicating that the questions were clear, understandable, and comprehensible. A subsequent pilot study aimed to enhance the tool's validity by identifying and resolving any issues with the questionnaire, leading to more precise results in the main study.^[20]

Reliability

The reliability of the questionnaire was checked using the test-retest method.^[21] Since the questionnaire used dichotomous items, this method could establish internal consistency.^[21] Five respondents answered the

questionnaire twice, with a 2-week interval between the two trials. The Pearson correlation coefficient was 0.85, indicating high internal consistency (>0.8) and reliability for assessing and measuring the intended parameters. However, these participants were not part of the study sample.

Ethical consideration

Institutional Review Board approval was obtained to deliver an online survey (IRB/COHS/STD/04/JAN2023). The participant information sheet delineated the study's objectives and ethical considerations and assured the confidentiality of responses to ensure clarity and adherence to ethical standards.

Statistical analysis method

Data collected through the questionnaire were analyzed using the Statistical Programme for Social Sciences (SPSS) software version 25 (IBM Inc., Armonk, NY). Descriptive statistics outlined the demographic characteristics and motivational factors influencing participants' career choices. To assess data normality, skewness, kurtosis, and a standard Q-Q plot were employed in a z-test.^[22] The normality tests for the demographic variables (i.e., gender, age, GPA, year of study) and the dependent variables (factors inspiring choice of diagnostic radiography as a profession, most essential skills required for success in diagnostic radiography, biggest challenges facing the diagnostic radiography profession in the UAE, and factors influencing the decision to pursue a career in diagnostic radiography) showed a normal distribution between the variables.

Results

Of the 100 responses, the characteristics of the participants are summarized in Table 1. All participants in the survey were over 18 years old. The gender distribution indicated that 78% of participants were female ($n = 78$), 52% of participants identified as Emirati ($n = 52$), and 48% were of foreign nationality ($n = 48$). Analysis of participants' Grade Point Average (GPA) revealed that 21% of respondents achieved an excellent GPA ($n = 21$), while 36% attained an outstanding GPA ($n = 36$). Most participants (37%) were classified in the 'good GPA' category ($n = 37$), while a smaller proportion (6%) had a 'fair GPA' ($n = 6$). Regarding the year of study, the distribution among participants was as follows: 18% were in their first year ($n = 18$), 47% were in their second year ($n = 47$), and 35% were in their final year of study ($n = 35$).

The survey results indicated that 47% of respondents prefer diagnostic radiography due to their interest in medical imaging technology. Other motivations included the perceived job opportunities within the field, cited by

Table 1: Demographic characteristics of the study sample

Demographic		Frequency	%
Age	Above 18	100	100.0
Gender	Male	22	22.0
	Female	78	78.0
	Total	100	100.0
Nationality	Emirati	52	52.0
	Foreigner	48	48.0
	Total	100	100.0
GPA	Excellent	21	21.0
	Very good	36	36.0
	Good	37	37.0
	Fair	6	6.0
	Total	100	100.0
Year of study	First year	18	18.0
	Second year	47	47.0
	Third year	0	0
	Final year	35	35.0
	Total	100	100.0

18% of respondents, the belief in the potential for high income, as mentioned by 14%, and personal interest in assisting patients, also cited by 14%.

Of the 100 respondents, 49% identified technical skills as the most critical factor contributing to success in diagnostic radiography. This finding underscores the criticality of being adept at operating and using diverse radiological equipment and technologies. Moreover, 24 respondents (24%) highlighted the importance of analytical skills. Conversely, only seven respondents (7%) identified interpersonal skills as crucial for success in diagnostic radiography.

According to study data, a majority of respondents, 65%, perceive job opportunities in diagnostic radiography to be high in the UAE. Conversely, 19 (19%) responded negatively, while 16% expressed uncertainty. Regarding continuing education in diagnostic radiography, 49 respondents consider it somewhat necessary, while 45% regard it as highly important. The participants' responses regarding the primary challenge facing the diagnostic radiography profession in the UAE varied significantly. The highest percentage, 36%, highlighted the scarcity of qualified individuals as the most significant obstacle. Following closely, 26% cited high demand and workload as substantial challenges. Among them, 23% identified more resources and equipment as the foremost challenge. Lastly, 15% of participants identified limited opportunities for career advancement as a significant challenge ($n = 15$) [Table 2].

According to the survey responses, 76% of participants believe the UAE adequately supports diagnostic radiographers with resources, funding, and training

opportunities ($n = 76$). Conversely, 19% of respondents feel that the UAE needs to offer more support. Among the respondents, the highest percentage, 31%, cited salary and benefits as the most critical factor influencing their career choice. Following closely, 28% indicated career opportunities, such as advancement prospects, as their primary motivation. In addition, 24% of participants cited job satisfaction as the main reason for choosing a career in diagnostic radiography ($n = 24$), while 6% mentioned the prestige associated with the profession. Furthermore, the survey results indicate that the majority, comprising 60% of respondents, reported being satisfied with their decision to pursue a career in diagnostic radiography. In comparison, 29% expressed satisfaction with their choice [Table 2].

In another aspect of the survey, participants were queried about their preferred Master's degree subject if they were to pursue one. Among the options provided, the highest percentage, 40% of respondents, chose ultrasound as their preferred major, emerging as the most popular choice. Nuclear medicine was selected by 17% of participants. Meanwhile, an equal number of respondents chose MRI and CT, each accounting for 23% [Table 2].

Discussion

This study aimed to identify the motivating factors driving UAE radiography students toward a career in diagnostic radiography. This research is significant as it can inform the development of educational and training programs for future radiography students in the UAE. By discerning the factors influencing students' career choices in diagnostic radiography, academic institutions can tailor programs to align with students' interests and aspirations. This alignment may contribute to the growth and advancement of the UAE's healthcare sector by attracting and retaining talented individuals within the field. Based on the findings of this study, radiography students in the UAE are primarily driven to pursue a career in diagnostic radiography by a combination of intrinsic and extrinsic factors.

Intrinsic factors are internal motivations, such as genuine interest in the field, a desire to help others, and enthusiasm for the work. In contrast, extrinsic factors are external influences, including advancements in medical imaging technology, opportunities for professional growth, continuous learning, and job availability. These extrinsic factors significantly attract individuals to a career in diagnostic radiography, complementing their intrinsic motivations.^[22]

The primary motivators identified include an interest in advancements in medical imaging technology and the

Table 2: Students' degree of agreement with motivational elements for selecting diagnostic radiography as a career

	Motivation Factor	Frequency	%
What inspired you to choose diagnostic radiography as a profession?	Personal interest	14	14.0
	Interest in medical imaging technology	47	47.0
	High-income potential	14	14.0
	Availability of jobs in the field	18	18.0
	Desire to help patients	5	5.0
	Influence of family or friends	2	2.0
	Others	0	0
	Total	100	100.0
What do you think are the most critical skills required to be successful in diagnostic radiography?	Technical skills	49	49.0
	Communication skills	19	19.0
	Analytical skills	24	24.0
	Interpersonal skills	7	7.0
	Problem-solving skills	1	1.0
	Others	0	0
	Total	100	100.0
What are the most essential qualities for success in diagnostic radiography?	Attention to detail	17	17.0
	Technical proficiency	67	67.0
	Strong communication skills	8	8.0
	Ability to work in a team	5	5.0
	Problem-solving skills	3	3.0
	Others	0	0
	Total	100	100.0
Do you think the availability of job opportunities in diagnostic radiography is high in the UAE?	Yes	65	65.0
	No	19	19.0
	Not sure	16	16.0
	Total	100	100.0
How important is continuing education to you in the field of diagnostic radiography?	Very important	45	45.0
	Somewhat important	49	49.0
	Not very important	5	5.0
	Not at all important	1	1.0
	Total	100	100.0
In your opinion, what is the biggest challenge facing the diagnostic radiography profession in the UAE?	Lack of resources and equipment	23	23.0
	High demand and workload	26	26.0
	Shortage of qualified professionals	36	36.0
	Limited opportunities for career advancement	15	15.0
	Others	0	0
	Total	100	100.0
Do you believe the UAE offers adequate support for diagnostic radiography professionals regarding resources, funding, and training opportunities?	Yes	76	76.0
	No	19	19.0
	Not sure	5	5.0
	Total	100	100.0
How important was the following factor in your decision to pursue a career in diagnostic radiography?	Salary and benefits	31	31.0
	Job satisfaction	24	24.0
	Work-life balance	11	11.0
	Opportunities for advancement	28	28.0
	Prestige of the profession	6	6.0
	Others	0	0
	Total	100	100.0
How satisfied are you with your decision to pursue a career in diagnostic radiography?	Very satisfied	29	29.0
	Satisfied	60	60.0
	Neutral	11	11.0
	Total	100	100.0
If you plan to get a Master's degree, which major will you choose?	MRI	23	23.0
	Ultrasound	40	40.0
	Nuclear medicine	17	17.0
	CT	20	20.0
	Total	100	100.0

potential for professional growth and advancement. In addition, these students recognize the importance of continuous professional development to stay updated on the latest advancements in the field and to deliver high-quality patient care. Intrinsic factors, such as personal interest in the field and a genuine desire to assist others, were less critical, underscoring the students' passion and enthusiasm for their future work. The availability of employment opportunities is a crucial consideration when selecting radiography as a profession. The demand for competent radiographers remains consistently high domestically and internationally, making it an appealing choice for individuals within the healthcare industry.^[23] In addition, the diverse range of career paths within radiography, including diagnostic imaging and therapeutic interventions, further enhances its attractiveness to aspiring professionals. Acknowledging the fundamental role of radiography in contemporary healthcare systems and ensuring ample job prospects solidifies its status as a gratifying and impactful career path for those seeking it.

A notable finding is that their expressed desire to assist patients underscores the students' empathy and understanding of the importance of diagnostic radiography in patient care. This finding illuminates the students' motivation to positively impact patients' lives through their work in diagnostic radiography, aligning with the core principles of healthcare professions. These findings are consistent with previous literature and studies conducted in radiography, which have consistently identified similar motivational factors.

Our observations align with the findings of a 2005 study conducted by Vosper, Price, and Ashmore,^[24] which indicated that individuals were primarily drawn to radiography due to their interest in technology. In addition, Payne^[25] highlighted that a more significant proportion of male students, as opposed to their female counterparts, were attracted to diagnostic radiography because of the field's technological aspects rather than the profession's empathetic nature. Recruitment materials could emphasize the opportunities within radiography careers for philanthropic endeavors and outline the various work environments available. Furthermore, job availability emerged as a significant factor influencing students' career preferences in the present study. These findings underscore the importance of addressing these factors in educational and healthcare institution programs and policies to attract and retain professional individuals.^[26]

Study findings regarding an interest in medical imaging technology as a significant motivational factor align with the results of the study conducted by Sockalingam *et al.*^[27] In their research, healthcare professionals participating

in the Project Extension for Community Healthcare Outcomes (ECHO) model demonstrated improved knowledge and skills, indicating a strong interest in staying updated with advancements in their field. This finding suggests that the UAE radiography students' motivation to pursue diagnostic radiography concurred with the broader trend of healthcare professionals' inclination towards lifelong learning.

By leveraging these findings, stakeholders can effectively contribute to the expansion and enhancement of the healthcare sector in the UAE and potentially beyond its borders.

Participants in this study expressed overall satisfaction with their career choices. This indicates that the motivational factors influencing their decision align with their experiences in the field. Moreover, their interest in further education in ultrasound, nuclear medicine, and MRI demonstrates their eagerness to expand their knowledge and skills. This finding suggests that these students are committed to professional growth and development.

The motivation factors identified in the present study, namely interest in medical imaging technology and the potential for professional growth and development, are consistent with the survey conducted by Alsharif *et al.*^[28] among Saudi radiography students. This suggests that these factors are influential across different cultural contexts and can be considered essential considerations in attracting students to the diagnostic radiography profession in the region. The alignment of findings further strengthens the generalizability of these motivational factors among radiography students. Furthermore, both studies reported high satisfaction levels among radiography students with their career choices. This indicates that the chosen profession aligns with their expectations and provides a fulfilling career path. Both studies revealed that intrinsic and extrinsic factors significantly contribute to the satisfaction and engagement of radiography students.

Participants in both studies expressed interest in further education in ultrasound, nuclear medicine, and MRI, indicating their commitment to professional growth and development. This finding underscores the importance of providing opportunities for continuous learning and specialization in radiography. Educational institutions and healthcare organizations must facilitate access to advanced training and resources to meet the needs and aspirations of radiography students.

It is worth noting that while the results of both studies are consistent in terms of the motivational factors identified, the present study focused on UAE radiography

students. In contrast, Alsharif *et al.*^[28] focused on Saudi radiography students. This suggests that the identified motivational factors are relevant within the broader Gulf region. However, further research is warranted to explore potential cultural or contextual differences that may influence the motivations of radiography students in different countries or areas.

The alignment of findings between the present study and the study by Hizzett and Snaith^[9] suggests that the identified motivational factors are influential across different contexts and educational settings. This provides a robust understanding of the factors that attract students to the diagnostic radiography profession. The consistency of the results also strengthens the generalizability of these findings to a broader population of radiography students. The high satisfaction levels reported by participants in both studies highlight that the chosen profession meets their expectations and offers a rewarding career path. This satisfaction underscores the role of motivational factors in fostering career engagement and well-being among radiography students. Moreover, aligning career choices with personal fulfilment not only contributes to individual contentment but also supports the sustainability of the profession by encouraging long-term commitment and reducing turnover.^[29-31]

However, this positive engagement does not eliminate the stress and pressure that radiography students experience throughout their education. The demanding nature of the coursework, clinical placements, and the high expectations from academic and clinical mentors often result in significant stress. This stress, if not effectively managed, can impact their well-being and ultimately their motivation to stay in the profession. Understanding the sources of stress and addressing them, alongside the identified motivational factors, is crucial for enhancing the overall student experience and ensuring long-term retention in the radiography field.^[31]

This study has several limitations that should be considered. First, the findings should be interpreted with caution due to the potential influence of self-selection bias, as the sample predominantly comprised students who voluntarily participated, possibly influenced by geographical or technical constraints associated with the online survey format. In addition, the higher proportion of female respondents limits the generalizability of the findings across genders. Future research should investigate gender-specific factors influencing attraction to the radiology field. Finally, the sample size could have been more extensive in particular universities, and instances of unrecorded data introduce potential variability, which may affect the robustness of the results.

Limitation

This study's findings should be interpreted with caution due to several limitations. Firstly, the sample size was relatively small and skewed toward certain universities, potentially limiting the generalizability of the results to the entire UAE radiography student population. In addition, the study relied on self-reported data, which may be subject to response bias, particularly in an online survey format. Another limitation is the over-representation of female respondents, which might not accurately reflect the perspectives of male students in the field. Furthermore, the absence of longitudinal data restricts the ability to assess how motivations may evolve or respond to changes in the healthcare landscape. Future research should consider a more diverse and larger sample, including longitudinal data, and explore gender-specific motivations to provide a more comprehensive understanding of factors influencing career choices in diagnostic radiography.

Recommendation

Based on the study's findings, it is recommended that educational institutions and healthcare policymakers in the UAE develop targeted strategies to address the key motivational factors influencing students' decisions to pursue a career in diagnostic radiography. Curricula should incorporate advanced medical imaging technologies and offer clear pathways for career growth and continuous learning to align with students' professional aspirations. In addition, enhancing support mechanisms such as career counselling, mentorship programs, and workshops focusing on technical and analytical skills could further attract and retain students in the field. Emphasis should also be placed on creating gender-inclusive initiatives to balance the gender disparity in radiography programs. Finally, conducting longitudinal studies to monitor changes in student motivations and adapting strategies accordingly will help ensure a well-equipped, motivated radiography workforce to meet the growing demands of the UAE's healthcare sector.

Conclusion

The findings underscore the key drivers attracting individuals to diagnostic radiography: advanced technology, career opportunities, and growth potential. These findings call for immediate action by educators and policymakers to design targeted curricula and support programs that inspire and retain talent. By addressing these motivations, stakeholders can strengthen the healthcare workforce in the UAE and beyond. Future efforts should include longitudinal studies to track changes in student motivation and explore how socioeconomic factors shape career choices. Such insights will enable the development of more effective strategies

to cultivate a skilled and committed radiography workforce, ensuring the continued advancement of healthcare services.

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Abbreviations

CAA: Commission for Academic Accreditation
CAGR: Compound Annual Growth Rate
CT: Computed Tomography
ECHO: Extension for Community Healthcare Outcomes
GPA: Grade Point Average
HEIs: Higher Education Institutions
IRP: Institutional Review Board
MRI: Magnetic Resonance Imaging
QPR: Professional Qualifications Register
SPSS: Software Platform Offers Advanced Statistical
UAE: United Arab Emirates.

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Conflicts of interest

There are no conflicts of interest.

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