

Knowledge and Attitude on Andropause among Staff at The International Islamic University Malaysia (IIUM) Kuantan, Pahang

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ABSTRACT

Background: Andropause, or male menopause, involves a gradual decline in testosterone levels in older men, impacting their physical, emotional, and sexual well-being. Unlike women's menopause, hormonal changes in men are gradual but can begin affecting health between ages 40 and 55. The objective of this study is to determine the association between level of knowledge and attitude with demographic data among 148 male staff members at International Islamic University Malaysia (IIUM), Kuantan Campus.

Methods: This descriptive cross-sectional study was conducted on 185 male staff at IIUM Kuantan campus. Data on the level of knowledge and attitude were collected using questionnaires, and then analysed using non-parametric tests, such as Kruskal Wallis and Mann Whitney due to non-normal distribution of the data after a normality test was conducted.

Results: Results showed that 60.8% of participants demonstrated high level of knowledge of andropause, though their level of attitudes ranged from neutral to slightly negative. Significant associations were found between BMI and level of knowledge ($p=0.027$), and between marital status ($p=0.034$), smoking status ($p=0.013$), and BMI ($p<0.001$) with level of attitude.

Conclusion: In conclusion, while male staff generally possess good knowledge of andropause, their attitudes are otherwise, suggesting a need for focused educational efforts to foster more positive perspectives on andropause among male staff of IIUM Kuantan Campus.

Keywords: Andropause; Knowledge; Attitude

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INTRODUCTION

Andropause is a complex process that can have a negative effect on men's quality of life in both the psychological and physical aspects. Andropause, more commonly referred as male menopause or tardy-onset low testosterone, is a physiological state marked by a progressive reduction in testosterone levels among older males (1). While men do not experience a sudden cessation of reproductive function like women during menopause, they undergo a more subtle hormonal transition that can have significant effects on their physical, emotional, and sexual well-being. Andropause symptoms start to appear between age of 40 to 55. According to Samipoor et al. (2017), problems with sexuality, reduced sexual desire, tiredness in general, changes in mood, cognitive impairment, irritability, problems with functioning and not having fun in their daily life, excessive sweating at night, and occasionally irregular heartbeats, and shrinking of height, were among the warning symptoms (2). The recognition of andropause demands the presence of signs and symptoms in addition to proof of decreasing testosterone levels in the blood or lower than normal values. According to Rezaei et al. (2020), for the duration of life, the levels of testosterone decrease by approximately 1% annually beginning at the age of 30 (3).

Testosterone is commonly recognized as the primary hormone present in the bloodstream, playing a crucial role in the activation and regulation of various physiological processes. These involve libido, blood cell production, bone mineralization, muscle development, as well as lipid and glucose metabolism (4). Testosterone, which is a crucial androgen synthesis mostly by the testes, assumes an essential role in the maintenance of men's overall well-being. Androgens influence various components of the sexual response system, including the central nervous system, the peripheral nervous system, and the corpora cavernosa. According to Livingston et al. (2017), a potential correlation exists between androgen insufficiency and reduction in sexual desire, occurrence of erectile dysfunction (ED), and reduced reaction to phosphodiesterase type 5 (PDE5) inhibitor therapy (5). Low testosterone levels is one of the conditions for detecting andropause. In most cases, testosterone level ranging from 13 to 28 nmol/L indicates sufficient gonadal function.

Insufficient functioning may occur when the cumulative levels of testosterone range from 8 to 12 nmol/L.

Recognizing and understanding the impact of andropause is essential for healthcare professionals and individuals alike to ensure appropriate diagnosis, management, and support for men experiencing this stage of life. However, most men above the age of 40 suffer from the signs and symptoms of andropause, and their knowledge and awareness of andropause are quite low (6). Thus, this study aims to explore knowledge and attitudes towards andropause among IIUM Kuantan staff. It focuses on IIUM Kuantan staff to gain insights into their understanding of the andropause. By shedding light on this topic, this study aims to contribute to the overall well-being and healthcare of this community and potentially extend its relevance to a broader population.

METHODS

Study Design

A descriptive cross-sectional study was carried out among the working staff at the International Islamic University Malaysia (IIUM), Kuantan Campus.

Study Setting

The study was conducted at the International Islamic University Malaysia (IIUM), Kuantan Campus, Pahang, Malaysia.

Population Sampling

The target population sample in this study was male staff from six Kulliyyah in IIUM Kuantan. The total number of staff from these six Kulliyyah consists of 393 male staff. The number of male staff consisted of 59 from Kulliyyah of Allied Health Science (KAHS), 37 from Kulliyyah of Pharmacy (KOP), 45 from Kulliyyah of Dentistry (KOD), 14 from Kulliyyah of Nursing (KON), 176 from Kulliyyah of Medicine (KOM), and 62 from Kulliyyah of Science (KOS).

Sampling Method

The selection of participants for this study was facilitated using the convenience sampling method. This approach falls under the category

of non-probability sampling, where individuals from the target population are chosen based on practical considerations. These criteria may include factors such as easy accessibility, geographical proximity, availability at the designated time, or willingness to participate (Jager et al., 2017). In other words, participants were selected based on their convenience and suitability for the study's requirements. Male staff from IIUM Kuantan who met the inclusion criteria were requested to participate in the survey.

Sampling Size

The study selected its participants from the staff among six Kulliyyah in IIUM Kuantan, specifically targeting male employees, including both academic and administrative staff. The total number of staff from these six Kulliyyah comprises 393 male staff. According to Al-Sejari, M. (2013), a similar study explored men's knowledge of andropause among 300 Kuwaiti males aged 20-70 years old. In that study, 286 Kuwaiti men completed the questionnaires, resulting in a response rate of 97.9%. The confidence interval was 95% with a margin of error of 5%. Based on Raosoft, using the previous study's population, the recommended sample size for this study is 185, including a 10% dropout factor.

Ethical Clearance

This study was conducted with ethical approval from the Kulliyyah of Nursing Postgraduate Research Committee (KNPGRC) and the International Islamic University Malaysia (IIUM) Research Ethics Committee (IREC 2024-114). Written informed consent was obtained from the study participants prior to answering the questionnaires.

Exclusion Criteria

Staff on extended leave or unavailable during the study period.

Subjects

A total of 185 male staff members from IIUM Kuantan Campus were recruited for this study based on the inclusion criteria. Those who met the criteria willingly participated, resulting in a response rate of 83.8%.

Data Collection

Questionnaire: A set of structured questionnaires was adapted from Maha et al. (2013) (7), Abootalebi et al. (2016) (8), and Hakimi et al. (2019) (9). The questionnaires were validated by at least three experts to ensure their validity and were pre-tested in a pilot study, resulting a Cronbach's Alpha of 0.809 for knowledge and 0.780 for attitude. The questionnaires were developed to gather information on the socioeconomic and demographic background of the subjects and explore the knowledge and attitudes on andropause among the respondents. All questions were closed-ended and designed to help the researcher classify participants by their knowledge and attitude levels.

The questionnaire separated into three sections:

Section A: Sociodemographic Status

The socio-demographic status is based on age range, marital status, smoking status, BMI, and have any medical history or not.

Section B: Knowledge Regarding Andropause

Knowledge regarding andropause will be assessed using 9 questions. The participants are asked to answer "yes", "no" and "unsure".

Section C: Attitude Regarding Andropause

This section consists of 9 items with a 5-point Likert scale which are 1- strongly disagree, 2- disagree, 3- neutral, 4- agree and 5- strongly agree. The scoring system used to categorize the attitudes higher scores indicate positive attitude followed by neutral attitude and negative attitude.

Statistical Analysis

Data were analysed using SPSS (Statistical Package for the Social Sciences) Version 27.0. After data entry was completed, the command for descriptive analysis was computed to obtain the percentage and mean scores. To assess the association between sociodemographic factors and questions measuring knowledge related to andropause, a normality test was conducted to determine the data distribution. Then, Kruskal Wallis and Mann Whitney tests were applied as the data was not normally distributed. The level of significance was set at < 0.05 .

RESULTS

Sociodemographic Background

Table 1 below shows the demographic data of respondents. The age of the respondents was slightly varied, and the range was 20 to 30, 31 to 40, and 40 above. About 7.4% of the respondents were 20 to 30 years old, 54.1% were 31 to 40 years old and 38.5% were 41 years old and above. Out of 148 respondents, 127 of them were married (85.5%), 20 of them were

single (3.5%) and only one respondent was divorced (0.7%). For smoking status, 50 participants were smokers (33.8%), while 98 were non-smokers (66.2%). One respondent had a BMI below 18.5 kg/m² (0.7%), 109 respondents had a BMI between 18.5 and 24.9 kg/m² (73.6%), 32 had a BMI between 25.0 and 29.9 kg/m² (21.6%), and six respondents had a BMI of 30.0 kg/m² or above (4.1%). There were 41 of the respondents had any medical history (27.7%) and 107 of them with no medical history (72.3%).

Table 1: Sociodemographic data of the respondents (N=148)

Variables		Frequency (n)	Percentages (%)
Age	20-30	11	7.4
	31-40	80	54.1
	40 and above	57	38.5
Marital status	Single	20	13.5
	Married	127	85.8
	Divorce	1	0.7
Smoking status	Yes	50	33.8
	No	98	66.2
BMI	Below 18.5	1	0.7
	18.5-24.9	109	73.6
	25.0-29.9	32	21.6
	30.0 and above	6	4.1
Medical history	Have any medical history	41	27.7
	No medical history	107	72.3

Respondents' Knowledge and Attitude Total Score on Andropause

In this study involving 148 participants, the total knowledge scores on andropause, as shown in Table 2, ranged from 9 to 27. A notable finding was that 60.8% of participants scored 9, indicating a higher level of understanding of andropause-related issues. Lower scores, closer to 9, were associated with better knowledge. The mean score of 11.01 and a standard deviation of 3.627 suggest moderate variability in knowledge levels across the sample. These results highlight that a significant proportion of participants demonstrated strong knowledge of andropause while also revealing areas where educational interventions could enhance understanding among those with higher scores. Overall, the study underscores the importance of targeted educational efforts to improve awareness and knowledge of andropause among diverse populations.

As shown in **Table 2**, the data on attitude scores toward andropause reveal variations in respondents' views across a spectrum. Scores range from 10 to 34, with a spread of 24 points. Lower scores, such as 10 to 13, had fewer participants expressing very positive views (3, 5, 5, and 4 occurrences, respectively). As scores increased, more participants leaned toward neutral or mildly positive attitudes. Peaks in frequencies around scores such as 17 and 19 (21 and 20 occurrences, respectively) indicate a sizable group with moderately positive attitudes. Higher scores above 20, such as 24 and 25, showed a decline in frequencies, suggesting that fewer participants held more negative attitudes. This distribution highlights the complexity of attitudes toward andropause, revealing that most respondents had moderate attitudes and suggesting that targeted interventions could help address gaps in understanding or misconceptions.

Table 2: Respondents' knowledge and attitude total score on andropause (N=148)

Respondents	Range	Minimum	Maximum	Mean	Std. Deviation
Knowledge	18	9	27	11.01	3.627
Attitude	24	10	34	18.18	4.540

Association Between the Sociodemographic and Knowledge Total Score on Andropause

As shown in **Table 3**, the association between socio-demographics and total knowledge scores on andropause varied. The socio-demographic factors analyzed included age range, marital status, smoking status, BMI, and medical history. A significance level (p -value) of 0.05 was set to determine the presence of an association. Among these factors, only BMI showed a significant association with total knowledge scores on andropause ($p=0.027$). In contrast, age range ($p=0.438$), marital status ($p=0.477$), smoking status ($p=0.877$), and medical history ($p=0.513$) did not show any significant associations. These results suggest that BMI may play a role in knowledge levels related to andropause, while other socio-demographic factors do not appear to have a meaningful impact.

Association Between the Sociodemographic and Attitude Total Score on Andropause

In this study, as shown in **Table 4**, the association between socio-demographics and total attitude scores on andropause varied. The socio-demographic factors analyzed included age range, marital status, smoking status, BMI, and medical history. A significance level (p -value) of 0.05 was set to determine the presence of an association. Marital status ($p=0.034$), smoking status ($p=0.013$), and BMI ($p<0.001$) had p -values below 0.05, indicating a significant association with total attitude scores on andropause. In contrast, age range ($p=0.409$) and medical history ($p=0.486$) showed no significant association. These findings highlight which socio-demographic factors may influence attitudes toward andropause and suggest areas for further research or targeted interventions.

Table 3: Association between sociodemographics and knowledge total score on andropause (N=148)

Variables		Frequency (n)	p -value
Age	20-30	11	0.438
	31-40	80	
	40 and above	57	
Marital status	Single	20	0.477
	Married	127	
	Divorce	1	
Smoking status	Yes	50	0.877
	No	98	
BMI	Below 18.5	1	0.027*
	18.5-24.9	109	
	25.0-29.9	32	
	30.0 and above	6	
Medical history	Have any medical history	41	0.513
	No medical history	107	

* p -value<0.05

Table 4: Association Between Socio-Demographics and Attitude Total Score on Andropause (N=148)

Variables		Frequency (n)	p-value
Age	20-30	11	0.409
	31-40	80	
	40 and above	57	
Marital status	Single	20	0.034*
	Married	127	
	Divorce	1	
Smoking status	Yes	50	0.013*
	No	98	
BMI	Below 18.5	1	<0.001*
	18.5-24.9	109	
	25.0-29.9	32	
	30.0 and above	6	
Medical history	Have any medical history	41	0.486
	No medical history	107	

*p-value<0.05

DISCUSSION

According to Mohammadi et al. (2023), andropause, or male menopause, is a condition where aging men experience a gradual decline in testosterone levels (1). Unlike female menopause, it doesn't lead to the end of reproductive ability. Symptoms include fatigue, depression, irritability, reduced libido, erectile dysfunction, decreased muscle mass, and increased body fat. The severity and onset of symptoms vary widely. Treatment options include lifestyle changes, hormone replacement therapy, and symptom-specific medications. The study at IIUM Kuantan revealed that a majority of male staff members possess good knowledge of andropause.

Among the 148 participants, knowledge scores ranged from 9 to 27, with 60.8% scoring 9, indicating a strong understanding of andropause-related issues. Lower scores were associated with better knowledge, suggesting moderate variability in knowledge levels. These findings highlight a substantial level of awareness among participants while also identifying opportunities to improve understanding among those with higher scores. According to Abootalebi et al. (2016), a study in Shiraz, Iran was done among male general physicians found poor knowledge of andropause (8). This can be attributed to both study populations being in healthcare settings. Factors contributing to this difference include IIUM Kuantan's supportive academic environment, which promotes continuous learning and health literacy through accessible

resources such as medical literature, seminars, and workshops. The staff's higher educational levels and intellectual engagement likely bolster their ability to engage with complex health topics such as andropause, fostering a conducive atmosphere for knowledge acquisition and dissemination.

The study found that respondents generally held neutral to slightly negative attitudes toward andropause, with a broad range of perspectives observed. This variation highlights the complexity of attitudes on the topic, with most participants displaying moderate views. These findings suggest potential gaps in understanding that targeted interventions could help address. Several factors may contribute to respondents' neutral to slightly negative attitudes. Despite good knowledge levels, cultural stigmas and misconceptions about aging and masculinity likely influence perceptions negatively (11,12). Variability in personal health experiences, particularly those with severe symptoms, may contribute to more negative outlooks (12). Additionally, inconsistent or conflicting information about andropause creates uncertainty, impacting attitudes. The absence of targeted awareness campaigns addressing specific andropause-related concerns also contributes to mixed attitudes (13). This contrasts with findings from Shiraz, Iran, where male general physicians exhibited positive attitudes toward andropause, recognizing its impact on quality of life as beneficial (8). However, widespread denial and negative perceptions persist, highlighting the need for greater education and open

discussions to promote more informed and accepting views on andropause within communities.

In this study, the age range was not found to have a significant association with the knowledge total scores on andropause, which similar to the result of a previous study (8). Several factors may explain this similarity. Men across different age groups might have comparable exposure to information about andropause through various media channels and healthcare providers, leading to similar knowledge levels (14). Interest in health topics such as andropause may also be consistent across age demographics (11). Educational attainment and socioeconomic status likely play a more significant role than age in determining access to and understanding of health information (15). Moreover, general health literacy and cultural attitudes toward male health could contribute to uniform knowledge levels regardless of age (8). Finally, if access to healthcare information is relatively equal across different age groups, men are likely to receive similar information about andropause, reducing age-related differences in knowledge. These factors suggest that while age may not be a key determinant of knowledge about andropause, socioeconomic and cultural contexts play a crucial role in shaping health awareness across diverse age groups.

This study's findings are similar to those of a previous which also found no significant association between marital status and total knowledge scores on andropause. This lack of association suggests that whether a man is married or single does not influence the amount of information he has about andropause. Both married and single men likely have access to similar sources of information, including media, healthcare providers, and educational resources. Interest in health issues such as andropause may also be comparable across marital statuses. Moreover, factors such as education level and general health awareness, which are independent of marital status, likely have a more significant impact on an individual's knowledge about andropause (16). These findings emphasize the role of broader societal and educational factors in shaping health knowledge, highlighting that marital status alone may not be a determinant of health-related awareness or information access.

In this study, similar to the findings of the study that was done by Rezaei et al. (2018), there is no significant association observed between smoking status and knowledge total scores on andropause (3). This lack of relationship suggests that smoking status itself does not directly influence an individual's access to or interest in information about andropause. Both smokers and non-smokers likely have equal opportunities to receive information from media, healthcare providers, and educational resources. Factors such as education level, general health awareness, and the presence of other health concerns are more influential in determining knowledge levels about andropause (14,16). Moreover, cultural attitudes and the focus of health education programs, which generally address broader health issues rather than specific behaviours like smoking, may contribute to similar levels of knowledge among smokers and non-smokers (17). Health education initiatives typically emphasize overall health and wellness, ensuring that information about andropause reaches both groups equally. Additionally, personal motivations for maintaining health and staying informed are likely strong regardless of smoking habits, further contributing to comparable knowledge levels about andropause across both smoking status categories (18).

This study found a significant association between BMI status and total knowledge scores on andropause, consistent with the findings of a previous study (2). This association may occur from several factors. Individuals with higher BMI levels often face more significant health challenges, prompting them to be more proactive in seeking information about health conditions, including andropause. Increased healthcare interactions among individuals with higher BMI levels may also contribute, as frequent visits to healthcare providers can lead to greater exposure to health education materials (19). Moreover, targeted health campaigns and educational programs tailored for individuals with higher BMI levels may emphasize the importance of understanding and managing health issues like andropause, further enhancing their knowledge on the subject (17). These factors collectively highlight the role of heightened health awareness and tailored health education initiatives in explaining the observed association between BMI status and knowledge about andropause in this study.

In this study, similar to the findings of a study that was done by Rezaei et al. (2018), there is no significant association found between medical history and knowledge total scores on andropause (3). Several factors may explain this similarity. Andropause may not be a primary focus during medical consultations for individuals with diverse medical backgrounds, as treatments and advice are typically tailored to their specific conditions rather than providing comprehensive education on andropause. Additionally, individuals may not perceive andropause as immediately relevant to their current health concerns, which could contribute to similar knowledge levels across different medical histories (20). Access to general health information through media and public health campaigns may also provide equal exposure to andropause-related information, regardless of medical background. Furthermore, personal motivation to learn about andropause may not differ significantly based on medical history, resulting in consistent knowledge levels among participants (17). These factors collectively suggest that while medical history may influence health outcomes, it may not substantially impact knowledge levels about andropause among the study population.

In this study, no significant association was found between age range and attitude total scores on andropause, which contrasts with the study that was done by Abootalebi et al. (2016), who found a significant age-related association with attitude on andropause (8). This discrepancy may be due to consistent cultural beliefs and widespread information dissemination about andropause across age groups. Personal health experiences and social influences also likely play significant roles in shaping attitudes toward andropause, indicating that age alone does not determine attitudes toward this topic. These findings underscore the complexity of factors influencing attitudes toward andropause beyond age demographics.

A significant association was found between marital status and attitude total scores on andropause, consistent with the previous study (8). This suggests that marital status influences how men perceive andropause. Married men may have more frequent healthcare interactions, possibly encouraged by their spouses, leading to greater awareness and more positive attitudes toward managing

health issues, including andropause. Spousal support and shared health discussions within marriage also play a role, potentially making married men more receptive to information and adopting positive attitudes. Conversely, single men may lack similar support and motivation, resulting in different attitudes toward andropause (21). These findings highlight the impact of social support and marital dynamics on shaping attitudes toward andropause.

Also, a significant association was found between smoking status and attitude total scores on andropause, contrasting with a previous study (2). Smokers and non-smokers likely have different health perceptions influenced by their lifestyles and interactions with healthcare providers. Smokers may be more aware of health risks, including andropause, due to frequent health warnings, potentially shaping distinct attitudes toward this issue. Additionally, social and psychological factors, such as stress and coping mechanisms, may further influence attitudes toward aging and related health concerns among smokers². These findings suggest that smoking status plays a role in shaping attitudes toward andropause, reflecting the complexity of health behaviours and perceptions.

Other than that, a significant association was found between BMI status and attitude total scores on andropause, similar to a study that was done by Maha (2013) that showed body weight influences how individuals perceive and approach issues related to andropause (7). Higher BMI individuals often face increased health risks and may be more attentive to health-related information and behaviours, including attitudes toward conditions like andropause (22). They may engage more actively with healthcare providers and health education programs, shaping more informed and positive attitudes. BMI status also reflects broader lifestyle factors such as diet, exercise habits, and overall health awareness, which influence health management strategies and attitudes toward aging and related health issues (22). Additionally, social and cultural norms regarding body weight and aging can impact attitudes toward andropause across different BMI categories, highlighting the multidimensional factors at play in shaping health-related perceptions and behaviours (23).

There is no significant association between medical history and attitude total scores on andropause, similar to the findings of a previous study (1). This suggests that past medical conditions or health histories may not influence how individuals perceive and approach issues related to andropause. Individuals with varied medical backgrounds often receive specific care tailored to their conditions rather than comprehensive education about andropause, which may not significantly affect broader attitudes toward it (1). Attitudes are likely shaped more by general health awareness, cultural beliefs about aging, and personal experiences rather than specific medical conditions alone (20). Healthcare interactions may prioritize managing existing conditions over discussing andropause specifically, potentially limiting the impact of medical history on attitudes toward age-related health issues.

CONCLUSION

To enhance awareness and understanding of andropause, future efforts should focus on organizing targeted campaigns and educational talks. These initiatives can not only improve knowledge but also foster more informed and positive attitudes toward andropause. By bridging the gap between awareness and perception, such programs can encourage a more supportive and proactive approach to managing andropause-related issues within the community. Ultimately, this strategy aims to improve overall health literacy and promote a more open and informed discussion on aging-related health challenges.

LIMITATIONS

This study is limited in several ways. Firstly, the study relies on the targeted respondents who are willing to take part in the survey, and only male staff from IIUM Kuantan were chosen as the study population. Secondly, the survey was distributed online via Email and WhatsApp first to guarantee widespread to all the respondents involved as the study population across all six Kulliyah in IIUM Kuantan. The online methods resulted in a low response rate by the respondents as they may have chosen to ignore or might not notice the email or WhatsApp. Also, the respondents may have less interest due to being extremely occupied with work and classes as most of the respondents are lecturers and staff working at

IIUM Kuantan. Despite these obstacles, the survey yielded useful insights into IIUM Kuantan staff on the knowledge and attitude regarding andropause. Moving forward, stronger communication tactics and engagement approaches are required to maximize involvement in future research projects.

CONFLICT OF INTEREST

There is no conflict of interest declared among the authors.

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AUTHOR CONTRIBUTIONS

WHRMF: drafted the manuscript including encompassing the design and refinement of the study's methodology, systematic data collection, data analysis, and insightful interpretation of findings. Additionally, contribute to the final writing of the manuscript.

RNHAR: contribute to the development of ideas by actively participating in the conceptualization process, conducting thorough reviews, and providing effective supervision to guide and support throughout the project.

SNSMT: contributed to the manuscript by assisting in data compilation and organization, literature review, proofreading, and formatting. Additionally, facilitated the article submission process, including ensuring adherence to journal guidelines and addressing initial editorial queries.

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