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### RESEARCH ARTICLE

#### AWARENESS AND CONSUMPTION OF PREBIOTICS AND PROBIOTICS AMONG ADULT (MALE/FEMALE) IN AL AHSA REGION

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#### Abstract

**Introduction:** Public awareness and interest in food that is highly related to their health benefits are flourishing. Even though there is a gap between the biomedical sciences experiments and the business of marketing, the accessibility of health-promoting channels/media leads the consumer to seek healthier food and drinks. Pre/probiotics have a big role in management and protection of gastrointestinal infection, allergic disease.

**The aim** of study is to find out the awareness and consumption of prebiotics and probiotics among adults (male/female) in Al-Ahsa region.

**Method:** Cross sectional study was conducted in Al Ahsa, KSA among adults using structured questionnaire which included questions related to demographic, anthropometric, frequency of consumption of prebiotics and probiotics and about health status. A clear inclusion and exclusion criteria data was set before the data collection. Arabic version of Questionnaire along with ethical consent form was distributed through social media total of 450 participated in the study with their consent, based on inclusion and exclusion criteria data of 384 respondents was included for statistical analysis, Data was collected, checked for completeness, and further analysis of the data was done by using (SPSS) software version 20, Descriptive statistics was calculated including frequencies and proportions for categorical variables. Approval for this study was obtained from KAIMRC and IRB

**Result:** Majority of the participants are not aware of the term prebiotic (64.3%) and probiotic (61.2%). However, pre/probiotics products (apples, leeks, garlic, yogurt) are available in all the supermarkets which (kefir and yakult) are rarely available, also the consumption of these products are in high percentage on regular basis (28% & 35%) daily and weekly basis, respectively. Significant association of age, gender, and educational level for awareness & consumption.

**Conclusion:** Pre/probiotics products are available abundantly in all the Al-Ahsa supermarket also the consumption rate, most of them aware of the health benefits of these products. However, the term Pre/probiotics

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is not very familiar to the population of Al Ahsa indicating need for increasing awareness about these products also its health benefits.

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### **Introduction:-**

Public awareness and interest in food that is highly related to their health benefits are flourishing. Even though there is a gap between the biomedical sciences experiments and the business of marketing, the accessibility of health-promoting channels/media leads the consumer to seek healthier food and drinks. Prebiotics can also be defined as a non-digestible food ingredient mostly of a carbohydrate base that improves human health by selectively stimulating the growth and/or activity of existing bacteria in the colon. Probiotic: "The term probiotic, meaning "for life," is derived from the Greek language". Prebiotic: "a non-digestible food ingredient that beneficially affects the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria in the colon." [1] . Whereas probiotic is "Live microorganisms which when administered in adequate amounts confer a health benefit on the host" [2] Probiotics are live bacteria and yeast which provide health benefits to the host when consumed. Their part as curative agents for management and protection of gastrointestinal infection, allergic disease and their anticancer possible is known globally. Several studies conducted in different region indicates the awareness about prebiotics and probiotics among adults is limited, study conducted in Benin city Nigeria with an aim to determine the range of knowledge on the use of probiotics among qualified medical practitioners. The survey asked about current awareness about the potential receptivity to using or recommending probiotics in patient care 62 medical practitioners responded. The outcome showed that 95.2% of the respondents were not familiar with the term probiotics, and all (100%) indicated that they would like more information about probiotics. [3] Another study with an aim to assess knowledge and awareness of Prebiotics and probiotics among a group of the population and to discover the consumption of Prebiotics and probiotics was conducted. 1000 consumers were administered through a personal interview to know the information about consumed Prebiotics and probiotics foods, mood, and frequency of its usage and health condition in which Prebiotics and probiotics are used (4). Food frequency and 24hr recall record method were used for studying the consumption pattern of Prebiotics and probiotics. Knowledge and awareness of Prebiotics and probiotics food and its Benefit were discovered to be dependent on educational, occupational status and gender of the consumer. The result of the study is presented to excite awareness of Prebiotics and probiotics foods among the chosen population and the result could be hired as a baseline study. Another study (5) to assess the knowledge and belief about probiotics among Jordanian college students and to determine factors associated with their consumption. A total of 1000 students were interviewed using a cross-sectional study (58.8 percent females and 41.2 percent males). Each student was asked to complete a questionnaire with socio-demographic data and was provided with probiotic knowledge. The results obtained showed that 11.7% of students had heard about probiotics, but only 7.0% knew correctly what probiotics were (6). Probiotic knowledge among students was significantly correlated with gender, marital status, and students major with more knowledgeable females than males. Therefore, health specialists need to make extra effort to educate [7]. A study in Saudi Arabia was distributed randomly through online social media (WhatsApp and Twitter) and the total number of the current study respondents was 1093 divided for 791 (70.9 %) females and 302 (27.1 %) males (8). There was a statistically significant difference between the different age groups, different educational level groups, marital status and job title groups in regard to if they hear or did not hear about beneficial bacteria our study revealed that the general population in Saudi Arabia seems to have good awareness and knowledge of probiotics, studies about the nature of probiotics and their health benefits, which could be used as a prevention tool for many diseases to occur" [9]. In humans, lactobacilli are commonly used as probiotics. Probiotics consider a beneficial agent that plays a significant role in terms of preventing and regulating the gastrointestinal and non-gastrointestinal conditions. [10] Probiotic and prebiotic have been known on their direct and indirect use and effect on the colonizing microbiota to improve human health. Based on a study that has been published recently, gut microbiota has the ability to regulate multiple physiological functions. In addition, energy regulation, cognitive processes, toxin neutralization and immunity against pathogens. Little is known about probiotic consumption or beliefs, despite its enhanced availability (11). Therefore, the aim of this study is to find out the Awareness and consumption of prebiotics and probiotics among adults (male/female) in Al-Ahsa region.

### **Materials and Methods:-**

Cross sectional study was conducted in Al Ahsa, KSA among adults using structured questionnaire which included questions related to demographic, anthropometric, frequency of consumption of prebiotics and probiotics and about

health status. This survey was conducted through social networking system like (Google form, Twitter, WhatsApp), and through personal interview method with a duration of three to five months in one year. A clear inclusion and exclusion criteria data was set before data collection. Sample size calculated by using Sample Size Calculator Raosoft. According to General Authority for Statistics of kingdom of Saudi Arabia the population sample size is 658930. [12] The estimated sample size of Raosoft calculator is approximately 384 participants the margin error is equal to 5% and the confidence interval (CI) is equal to 95% [13]. Adequate sample size of 384 adult populations from Al-Ahsa region were included in the study by a purposive sampling technique based on inclusion and exclusion criteria to minimize sampling error and to ensure representativeness. To collect information regarding awareness and consumption of probiotic/prebiotic among adults, English and Arabic version of Questionnaire along with ethical consent form was distributed through social media total of 450 participated in the study with their consent, based on inclusion and exclusion criteria data of 384 respondents was included for statistical analysis, Data was collected, checked for completeness, and further analysis of the data was done by using (SPSS) software version 20, Descriptive statistics was calculated including frequencies and proportions for categorical variables. A pilot survey was administered to give more emphasis on internal consistency reliability and the construct validity. Pilot study was conducted on 10% of the study samples to see the validity of the questionnaire. Also, a reliability test (Cronbach's alpha) was utilized to measure the internal consistency of the items. Approval for this study was obtained from KAIMRC and IRB

### Results and Discussions:-

Majority of respondents were in the age group of 18-25years (79.2%) were from Al-Oyoon region (38.5%). Female participation in survey was (80.7%) compare to males (19.3%) and higher number of respondents were graduates (51.3%) depicted in table #1. Table #2 represents the awareness of term prebiotics and probiotics and its sources of information and different products. It is clear from the table that majority of respondents not aware of the term pre and probiotics (64.3%) & (61.2%) respectively. Consumption of probiotic product is more compare to prebiotic products among respondents. Similarly, it can be note that awareness about characteristics of the product whether it is pre and probiotic is limited for yakult, yogurt, garlic, leeks, apples, and kefir. Frequency of consumption of pre and probiotic products is shown in diagram#1

**Table1:-** Demographic characteristics data of the respondents.

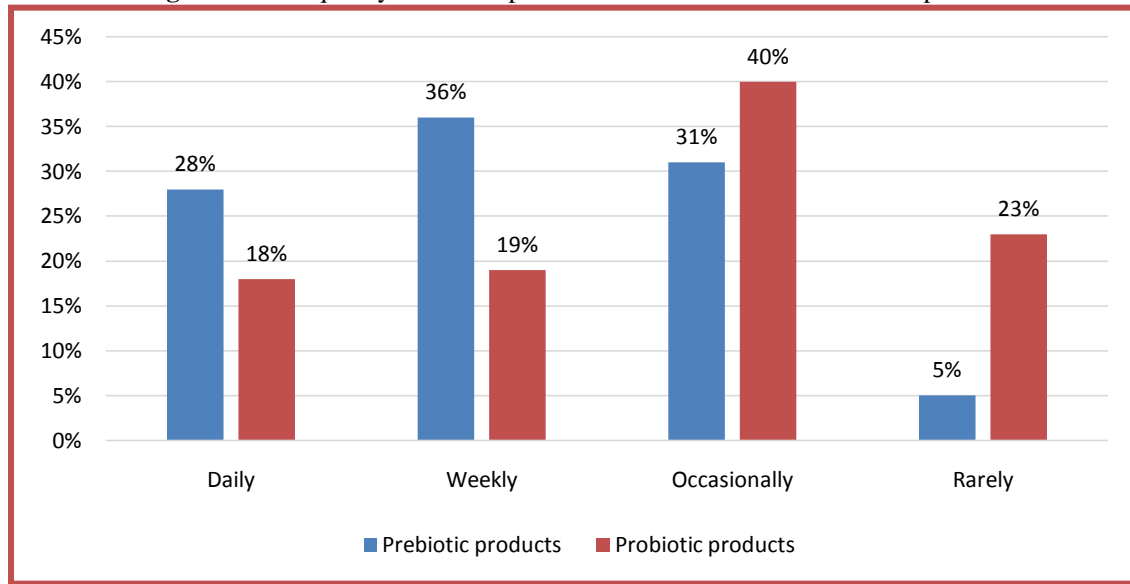
Variable		Frequency (%)
Age	18-25	304 (79.2%)
	25-30	48 (12.5%)
	30-35	29 (7.6%)
	35-40	3 (.8%)
Residing place	Hufuf	95 (24.7%)
	Al-Mubarraz	112(29.1%)
	Al-Oyoon	148 (38.5%)
	Al Omran	29 (7.6%)
Sex	Males	74 (19.3%)
	Females	310 (80.7%)
Educational level	< Grade 10	124 (32.3%)
	Graduate	197(51.3%)
	Postgraduate	63 (16.4%)

**Table 2:-** The awareness of pre/probiotic term among participants and the sources.

Variable		Prebiotic Frequency (%)	Probiotic Frequency (%)
Awareness of term pre/probiotic	Yes	137 (35.7%)	149 (38.8%)
	No	247 (64.3%)	235 (61.2%)
Consumption of pre/probiotic	Yes	147 (38.2%)	235 (61.2%)
	No	237 (61.8%)	149 (38.8%)
Source of information	Books	33 (8.6%)	37 (9.6%)
	Media/internet	80 (20.8%)	79 (20.6%)
	Other sources	51 (13.3%)	47 (12.2%)
Products	Yakult	215 (56.0%)	169 (44%)

	<b>Yogurt</b>	172 (44.8%)	212 (55.2%)
	<b>Garlic</b>	232 (60.4%)	152 (39.6%)
	<b>Leeks</b>	201 (52.3%)	183 (47.7%)
	<b>Apples</b>	233 (60.7%)	151 (39.3%)
	<b>Kefir</b>	190 (49.5%)	194 (50.5%)

**Diagram#1:-** Frequency of consumption of known Prebiotic and Probiotic products.



**Table#4:-** Association between awareness of pre/probiotic term and demographic characteristics of participants.

Variable		Awareness of term pre/probiotic		$\chi^2$ Value
		Yes Number	No Number	
Age	18-25	95	209	33.96*
	25-30	31	17	25.22*
	30-35	15	14	5.44 <sup>NS</sup>
	35-40	3	0	42.31*
Residing place	Hufuf	55	40	9.21 <sup>NS</sup>
	Al-Mubarraz	68	44	23.11*
	Al-Oyoon	88	60	9.91 <sup>NS</sup>
	Al Omran	15	14	5.59 <sup>NS</sup>
Sex	Males	35	39	9.98 <sup>NS</sup>
	Females	223	87	15.45*
Educational level	< Grade 10	35	89	16.21*
	Graduate	112	85	14.11*
	Postgraduate	45	18	25.23*

\* Significant at 5% Level, NS: Non-significant

It is evident from the table # 4 that significant association of age and awareness and educational level. Awareness of male for the term pre/ probiotic is non-significant compare to females' similar results obtain in the study conducted in Tamil Nadu among 200 dental students, Data were gathered by a questionnaire which determines the participants' awareness of probiotics. 63% of Female and 37% of males participated. The result of the survey showed that there was a high level of knowledge on the significance of probiotics on health, its components, its food source and knowing the term probiotics. However, there was a high number of participants 161(80.5%) of the participants were unaware of the significance of probiotics in dentistry [14].

**Table#5:-** Association between consumption of pre/probiotic and demographic characteristics of participants.

Variable		Consumption of pre/probiotic products		$\chi^2$ Value
		Yes Number	No Number	
Age	18-25	115	189	23.96*
	25-30	38	10	35.22*
	30-35	15	14	5.44 <sup>NS</sup>
	35-40	3	0	42.31*
Residing place	Hufuf	45	50	8.11 <sup>NS</sup>
	Al-Mubarraz	78	34	33.11*
	Al-Oyoon	76	72	7.91 <sup>NS</sup>
	Al Omran	15	14	4.59 <sup>NS</sup>
Sex	Males	40	34	9.15 <sup>NS</sup>
	Females	189	121	15.45*
Educational level	< Grade 10	29	95	26.21*
	Graduate	105	92	24.11*
	Postgraduate	43	20	29.23*

It is clear from the table # 5 that significant association of age and awareness and educational level for consumption of pre and probiotic products. Consumption of male for pre/ probiotic products is non-significant compare to females, respondents residing al Mubarraz region consume significantly higher compare to other region as availability of these products in supermarkets. Similar results obtain in the study conducted in the United Arab Emirates (UAE)(15), represents the Arabian Peninsula's first evaluation of probiotic products. From a variety of sources, including pharmacies, health food stores and supermarkets across the UAE, probiotic products were purchased over the counter. All identified products have been listed and product preparation type and labeling information have been recorded. A total of 37 probiotic products have been identified, including 15 dairy products and 22 non-dairy products. The dairy products were made up of 12 yogurts, two fermented dairy products and one powdered formula for babies. Most non-milk products were in the form of capsules (n=16). While all non-milk products provided information on the strain and number of probiotic microorganisms present at the time of manufacture, this information was provided for only one dairy-based product. Lactobacillus acidophilus strains were identified as the most common probiotic organisms. These findings indicate that the Arabian Gulf offers a wide variety of probiotic products(15). Developing guidelines for labeling these probiotic products and using statements of structure/function and health claims should be addressed.

**Table#6:-** Association between health benefits of pre/probiotic products and demographic characteristics of participants.

Variable		Positive effect on GI tract, increase immunity, reduce diarrhea, reduce disease risk, and improve general well being			$\chi^2$ Value
		Yes Number	No Number	May be Number	
Age	18-25	115	97	92	9.15 <sup>NS</sup>
	25-30	38	8	2	35.22*
	30-35	15	11	3	25.44*
	35-40	3	0	0	42.31*
Sex	Males	30	23	21	9.15 <sup>NS</sup>
	Females	189	97	24	15.45*
Educational level	< Grade 10	29	80	15	26.21*
	Graduate	105	79	13	24.11*
	Postgraduate	43	14	6	29.23*

Table # 6 clearly indicates that age, gender, and educational level are significantly associated with knowledge about the pre/probiotic products, similar observations seen study conducted in Saudi Arabia (16) indicates the overall level of knowledge of probiotic/prebiotic among Saudi Arabian women is slightly above average. Improved nutritional knowledge of Saudi Arabian women tasked with taking care of their own nutrition, and that of their families, has implications for the adoption of health eating patterns.

### Summary and Conclusion:-

From above results it can be concluded that awareness about pre and probiotics products is dependent on educational status and gender of the consumer and Therefore, health specialists need to make extra effort to educate general population about the health benefit and daily consumption. Pre/probiotics products are available abundantly in all the Al-Ahsa supermarket also the consumption rate, most of them aware of the health benefits of these products. However, the term Pre/probiotics is not very familiar to the population of al Ahsa indicating need for increasing awareness about these products also its health benefits.

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### References:-

1. Schrenzenmeir, J., & de Vrese, M. (2001). Probiotics, prebiotics, and synbiotics— approaching a definition. *The American journal of clinical nutrition*, 73(2), 361s-364s.
2. Joint, F. A. O. (2002). WHO working group report on drafting guidelines for the evaluation of probiotics in food? London, Ontario, Canada, 30. ISO 690
3. Anukam, K. C., Osazuwa, E. O., & Reid, G. (2006). Knowledge of probiotics by Nigerian clinicians. *International Journal of Probiotics and Prebiotics*, 1(1), 57.
4. *International Journal of Scientific Research and Reviews*. (2019). [http://www.ijssr.org/down\\_396.php](http://www.ijssr.org/down_396.php)
5. Al-Nabulsi, A. A., Obiedat, B., Ali, R., Osaili, T. M., Bawadi, H., Abushelaibi, A., ... & Holley, R. A. (2014). Knowledge of probiotics and factors affecting their consumption by Jordanian college students. *International Journal of Probiotics & Prebiotics*, 9(3).
6. C. Senok, A. (2009). Probiotics in the Arabian Gulf region. *Food & Nutrition Research*, 53(1), 1842.
7. Asma'a, A. F., Alotaibi, A. F. M., Alnofaie, H. S., Alsuhailani, N. N., & Al-Dosary, S. N. (2018). Assessment of Saudi Public Knowledge, Attitude and Awareness Towards Oral Benefits of Probiotics: A Cross-Sectional Study. *Biomedical and Pharmacology Journal*, 11(4), 1995-2004.
8. Donato-Capel, L., Garcia-Rodenas, C. L., Pouteau, E., Lehmann, U., Srichuwong, S., Erkner, A., ... & Sagalowicz, L. (2014). Technological means to modulate food digestion and physiological response. In *Food structures, digestion and health* (pp. 389-422). Academic Press.
9. *International Journal of Scientific Research and Reviews*. (2019). <http://www.ijptonline.com/wp-content/uploads/2017/04/29129-29135.pdf>
10. Morawska, A., Górna, I., Boleslawska, I., & Przyslawski, J. (2016). The nutritional awareness of functional food among university students in Poland. *Roczniki Państwowego Zakładu Higieny*, 67(2).
11. Saavedra, J. M., & Tschernia, A. (2002). Human studies with probiotics and prebiotics: clinical implications. *British Journal of Nutrition*, 87(S2), S241-S246.
12. General Authority for Statistics. (2019). <https://www.stats.gov.sa/en/852>
13. Raosoft. (2019). Retrieved from <http://www.raosoft.com/samplesize.html>
14. Allah, H. A. A. (2019). The Knowledge and Perceptions Regarding Probiotics Among the People of Al-Qassim Region, Saudi Arabia. *Journal of Health and Medical Sciences*, 2(3).
15. Nguyen, M., Ferge, K. K., Vaughn, A. R., Burney, W., Teng, L. H., Pan, A., ... & Sivamani, R. K. (2019). Probiotic Supplementation and Food Intake and Knowledge Among Patients and Consumers. *Probiotics and antimicrobial proteins*,
16. Alissa N. Saudi Arabian Women's Knowledge of Probiotics and Prebiotics. *Progr Nutr [Internet]*. 2022 Jan. 17 [cited 2023 Apr. 16];23(4):e2021154. Available from: <https://www.mattioli1885journals.com/index.php/progressinnutrition/article/view/11503>.