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CONTENTS OF THE ISSUE

Gender Differences in Olfactory Recognition: A Comparative Study of Odour Stick Tests in High School Students

By Naomi Katayama

Nagoya Women's University

Abstract- There are two types of olfactory testing methods that can be used for screening in Japan. Both methods test detection and recognition of 12 odors commonly found in Japan. It has also been reported that the detection and recognition abilities of the sense of smell gradually decline with age. It has also been noted that the results of odor tests tend to be poorer in male than in female as they get older, from their 40s onwards. However, odour tests are not often conducted on younger generations. Therefore, this study aimed to compare whether there are gender differences in odour tests in high school students.

Keywords: olfactory perception, odour stick, japanese odours, gender differences, high school students.

GJMR-K Classification: NLMC Code: BF232

GENDERDIFFERENCESINOLFACTORYRECOGNITIONACOMPARATIVESTUDYOFODOURSTICKTESTSINHIGHSCHOOLSTUDENTS

Strictly as per the compliance and regulations of:

Gender Differences in Olfactory Recognition: A Comparative Study of Odour Stick Tests in High School Students

Naomi Katayama

Abstract- There are two types of olfactory testing methods that can be used for screening in Japan. Both methods test detection and recognition of 12 odors commonly found in Japan. It has also been reported that the detection and recognition abilities of the sense of smell gradually decline with age. It has also been noted that the results of odor tests tend to be poorer in male than in female as they get older, from their 40s onwards. However, odour tests are not often conducted on younger generations. Therefore, this study aimed to compare whether there are gender differences in odour tests in high school students.

After receiving an explanation of the study and signing a consent form, 114 high school students (47 boys and 67 girls) were given an odour test using odour sticks. Participants smelled 12 different odours and wrote the number of the option they thought was correct from six options (numbers 1 to 4 list various specific odors name, five indicates that the particular odour is unknown but that it smells like something, and number 6 indicates that it has no odour) in the answer box.

The olfactory test results of boys and girls students were compared using statistical methods (chi-square test).

As a result, there was no statistically significant difference between boys and girls high school students who could recognize six or more of the 12 odours familiar to Japanese people (P=0.482). However, when the results of each odour were analyzed separately, boys students recognized statistically significantly fewer doors than girls students for the odours of India ink (P=0.031*), mandarin orange (P=0.0001**), and roasted garlic (P=0.047*). The sense of smell develops little by little from infancy, peaking in the teens, and then gradually declines. Therefore, testing teenagers' olfactory perception abilities is important. From these results, we believe it is necessary to check the smells individually, not just to count the number of correct answers. We also believe that more data is needed to see the difference in olfactory recognition between boy (male) and girl (female).

Keywords: olfactory perception, odour stick, japanese odours, gender differences, high school students.

I. Background

Odour tests vary from country to country, but in Japan, 12 different types of odours (ink, wood, perfume, menthol, mandarin oranges, curry, household gas, roses, cypress, sweaty socks, condensed milk, fried garlic) that are familiar in Japanese life are used. Odour tests produce results by examining both detection and recognition. Many researchers have reported that it becomes harder to detect odours because of aging [1-12]. The sense of smell develops little by little from infancy, Peaking in the teens, and then gradually declines. Female are less likely to experience a decline than male, and the sese of smell gradually weakens in male from their 60s and in female from their 70s, but it is said that olfactory disorders become ecident in more than 70 to 80 percent of people over the age of 80. We have also reported that test results from age 40 onwards show that both male and female can detect odours but their recognition declines with age, and that after age 60, male recognition declines more than female [11-18]. On the other hand, there are few reports of odour test results among younger generations. Despite the established research on aging, there is a scarcity of data on gender differences in olfactory performance in younger populations. Therefore, the purpose of this study was to conduct odour tests on young boy (male) and girl (female) and compare the results to confirm whether there are any gender differences.

II. Materials and Methods

The participants in this study were 47 boys and 67 girls aged between 15 and 17 years who had attended the cultural festival of our university (This study was reviewed and approved by the Ethics Committee of Nagoya Women's University). Informed consent was obtained from all participants following an explanation of the study's purpose and procedures. High school students voluntarily participated in this study. They were taking an olfactory test for the first time. They answered in a subjective pre-test questionnaire that they had no problems with their sense of smell. Participants tested 12 different smells using the smell stick smell test kit and wrote down the results in the answer column. The twelve different types of odors closely related to the lives of Japanese people (ink, wood, perfume, menthol, mandarin oranges, curry, household gas, roses, cypress, sweaty socks, condensed milk, fried garlic). The smell sticks are manufactured by Daiichi Pharmaceutical Industry Co., Ltd., and participants are asked to open a smell-soaked filter paper in front of their

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nose while looking at the answer options. To compare the results of boys and girls odour tests, the number of correct and incorrect answers for each of the 12 odours was statistically compared using the chi-square test.

III. RESULTS

The 114 high school students aged between 15 and 17 years (mean age ±standard deviation: 15.7±0.9) (See Table1).

Table 1: Age Distribution of High School Students

	15s	16s	17s
Boys	36	10	1
Girls	26	11	30

All 114 high school students who participated took two types of odour tests and wrote their results in the answer column (See Table 2)

Table 2: Number of Correct Answers given by High School Girls and Boys

Number of Corredt Answer	0 Points	1 Points	2 Points	3 Points	4 Points	5 Points	6 Points
Odour Stick (Girls = 67)	0	0	3	2	2	5	3
Odour Stick (Boys = 47	0	0	1	0	4	1	2
Number of Corredt Answer	7 Points	8 Points	9 Points	10 Points	11 Points	12 Points	
Odour Stick (Girls = 67)	3	8	11	22	7	1	
Odour Stick (Boys = 47)	9	8	4	7	6	5	

The results of the chi-square test for the number of correct answers and incorrect answers in boys and girls odour tests are shown in Table 3. There was no statistically significant difference between the results of the two odour tests (P=0.482).

Table 3: Comparison of the Results of Odour Stick Tests (P=0.482)

The Maximum score is 12 points	Less than Six correct answers	Six more correct answer
Odour Stick (Girls = 67)	15	52
Odour Stick (Boys = 47)	8	39

The results of the chi-square test comparing the results of the 12 different types of odour test are shown in Tables 4 to 15.

Table 4: x^2 Test Comparison of the Results of Odour Tests (India Ink) High School Girls and Boys (P=0.331*)

India ink	Correct answer	Incorrect answer	Total
Odour Stick (Girls = 67)	32	35	67
Odour Stick (Boys = 47)	13	34	47
Total	45	69	114

Table 5: x^2 Test Comparison of the Results of Odour tests (Timber) High School Girls and Boys (P=0.530)

Timber	Correct answer	Incorrect answer	Total
Odour Stick (female = 67)	41	26	67
Odour Stick (male = 47)	26	21	47
Total	67	47	114

Table 6: x^2 Test Comparison of the Results of Odour Tests (Perfume) High School Girls and Boys (P=0.250)

Perfume	Correct answer	Incorrect answer	Total
Odour Stick (Girls = 67)	40	27	67
Odour Stick (Boys = 47)	33	14	47
Total	73	41	114

Table 7: x^2 Test Comparison of the Results of Odour Tests (Menthol) High School Girls and Boys (P=0.054)

Mentho	Correct answer	Incorrect answer	Total
Odour Stick (Girls = 67)	47	20	67
Odour Stick (Boys = 47)	40	7	47
Total	87	27	114

Table 8: x^2 Test Comparison of the Results of Odour Tests (Mandrain Orange) High School Girls and Boys (P=0.0001**)

Mandarin Orange	Correct answer	Incorrect answer	Total
Odour Stick (Girls = 67)	50	17	67
Odour Stick (Boys = 47)	0	47	47
Total	50	64	114

Table 9: x^2 Test Comparison of the Results of Odour Tests (Curry) High School Girls and Boys (P=0.441)

Curry	Correct answer	Incorrect answer	Total
Odour Stick (Girls = 67)	46	21	67
Odour Stick (Boys = 47)	29	18	47
Total	75	39	114

Table 10: x^2 Test Comparison of the Results of Odour Tests (Household Gas) High School Girls and Boys (P=0.164)

Household Gas	Correct answer	Incorrect answer	Total
Odour Stick (Girls = 67)	40	27	67
Odour Stick (Boys = 47)	34	13	47
Total	74	40	114

Table 11: x^2 Test Comparison of the Results of Odour Tests (Rose) High School Girls and Boys (P=0.610)

Rose	Correct answer	Incorrect answer	Total
Odour Stick (Girls = 67)	44	23	67
Odour Stick (Boys = 47)	33	14	47
Total	77	37	114

Table 12: x^2 Test Comparison of the Results of Odour Tests (Cypress) High School Girls and Boys (P=0.147)

Cypress	Correct answer	Incorrect answer	Total
Odour Stick (Girls = 67)	56	11	67
Odour Stick (Boys = 47)	34	13	47
Total	90	24	114

Table 13: x^2 Test Comparison of the Results of Odour Tests (Stinky Socs/Sweaty) High School Girls and Boys (P=0.996)

Stinky Socs / Sweaty	Correct answer	Incorrect answer	Total
Odour Stick (Girls = 67)	57	10	67
Odour Stick (Boys = 47)	40	7	47
Total	97	17	114

Table 14: x^2 Test Comparison of the Results of Odour Tests (Condensed Milk) High School Girls and Boys (P=0.446)

Condensed Milk	Correct answer	Incorrect answer	Total
Odour Stick (Girls = 67)	47	20	67
Odour Stick (Boys = 47)	36	11	47
Total	83	31	114

Table 15: x^2 Test Comparison of the Results of Odour Tests (Fried Garlic) High School Girls and Boys (P=0.047)

Fried Garlic	Correct answer	Incorrect answer	Total
Odour Stick (Girls = 67)	56	11	67
Odour Stick (Boys = 47)	39	18	47
Total	95	29	114

Moreover, only the chi-square test results for the 12 different types of odours are shown in Table 16. Of the 12 different odours, there was a statistically significant difference between the results of boys and girls for the odours of India Ink (P=0.031*), mandarin orange (P-0.0001**) and fried garlic (P=0.047*). In both cases, the boys answer was shown to have a harder smell to discern that the girls answer.

IV. DISCUSSION

In previous studies, females performed better on olfactory tests than males[1-10], with a statistically significant decline in olfactory perception with increasing age[1-12,]. In recent years, there have been reports of cases showing abnormalities in the sense of taste and smell due to the COVID-19 epidemic [13-23]. In most cases, olfactory test results are obtained from middle-aged and older people, and there few results are reported for younger people. In this study, we conducted olfactory test using odour sticks on high school students who visited a university festival, and obtained the results.

For the 12 different odours, the average number that the boys high school students were able to recognize was 8.38, and for the girls students the average was 8.30. There was no statistically significant difference between the number of correct odour answers between boys and girls high school students. A chi-square test was used to compare the number of correct answers given by boys and girls high school students for each odour. The results showed that there was no statistically significant difference between the odours of wood, perfume, menthol, curry, household gas, roses, cypress, stinky socks/ seaty, and condensed milk. However, when comparing the individual smells, the smell of india ink was recognized by only 13 out fo 47 boys high school students, but by 32 out of 67 girls high school students. Statistically, the result of the chi-square test was P=0.031*, making it clear that there was a significant difference. Similarly, when comparing the smell of mandarin oranges, none of the 47 boys high school students were able to recognized the smell, while

50 of the 67 girls high school students were able to recognize it. Therefore, the results of the chi-square test showed a statistically significant difference between the two groups (P=0.0001**). Furthermore, for the smell of roasted garlic, 33 out of 47 boy high school students could recognize the scent, while 4 out of 67 girls high school students could recognize the scent. Statistically, the chi-square test results showed a significant difference (P-0.047*).

The smell of India ink is something that students remember because they used it during Japanese calligraphy classes in elementary and junior high school. Still it seemed that the smell did not stick in the boys' minds as sassily as it did in the girls. It was a shocking, result that none of the boy high school students could recognize the scent of mandarin oranges, it seems that it is difficult for them to distinguish the smell of fruits. As for the scent of fried garlic, since it is difficult for junior high school students to recognize it, it may be necessary to have them make an effort to remember the smell by being conscious of it while eating. Compared to girls high school students, boys high school students tend to belong to more sports clubs and less to cultural clubs (cooking club, tea ceremony club, flower arrangement club, calligraphy club, etc.). Boys high school students also tend to have fewer opportunities to help with household chores such as cooking compared to girls high school students. Therefore, there is a possibility that they have fewer opportunities to come into contact with the smell of food on a daily basis. In the future, it will be necessary to investigate student life and eating habits through questionnaires and other means, and correlate this with the results of olfactory tests.

V. CONCLUSION

This study explored olfactory test results among high school students, a population that has not been widely studied in olfactory research. Twelve types of odours familiar to Japanese people were tested for high school students using odour sticks. As a result, there was no statistical difference in the number of correct

answers between boys and girls high school students (chi-square test). However, when comparing individual odours, boy high school students had statistically lower recognition rates than girls for the odors of India ink, mandarin oranges, and roasted garlic. There may be a possibility, boys are less familiar with these specific smells due to cultural or lifestyle factors.

Ethics Statement

The studies involving human participants were reviewed and approved by the Ethics Committee of Nagoya Women's University (approval number 2019-26). The participants provided their written informed consent to participate in this study.

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Impact of Nutritional Therapy in the Post-Operative Period of Patients Undergoing Gastrectomy for Gastric Adenocarcinoma - A Systematic Review

By Diego Mendes da Silva, Joanna Clara Alves dos Santos, Vitoria Moreira de Souza & Mônica Fernandez

Universitário São Camilo

Abstract- *Objective:* To understand and identify the beneficial determining factors in nutritional intervention and management in the treatment of patients with gastric adenocarcinoma undergoing gastrectomy.

Method: This study was carried out based on searches in the PubMed, LILACS and SciELO databases, published between 2008 and 2023 in English, Portuguese and Spanish. The following descriptors were used in Portuguese: gastric adenocarcinoma, gastrectomy, oral nutritional therapy with emphasis on the postoperative period, descriptors in English: gastric adenocarcinoma, gastrectomy, oral nutritional therapy with emphasis on the postoperative period, and descriptors in Spanish: gastric adenocarcinoma, gastrectomía, terapia alimentacional oral com enfoque no pós-operativo.

Keywords: *gastric carcinoma; nutritional status; gastrectomy; nutritional support; prolonged fasting.*

GJMR-K Classification: LCC Code: RC280.S5

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Impact of Nutritional Therapy in the Post - Operative Period of Patients Undergoing Gastrectomy for Gastric Adenocarcinoma – A Systematic Review

Impacto Da Terapia Nutricional No Pós-Operatório De Pacientes Submetidos A Gastrectomia Por Adenocarcinoma Gástrico – Uma Revisão Sistemática

Diego Mendes da Silva [α], Joanna Clara Alves dos Santos [σ], Vitoria Moreira de Souza [ρ] & Mônica Fernandez [ω]

Year 2024

Resume- Objetivo: Compreender e identificar os fatores determinantes benéficos na intervenção e manejo nutricional no tratamento de pacientes com adenocarcinoma gástrico submetidos à gastrectomia.

Método: O presente estudo foi realizado a partir de pesquisas nas bases de dados PubMed, LILACS e SciELO, publicados entre os anos de 2008 e 2023 nos idiomas inglês, português e espanhol. Foram utilizados os seguintes descritores em português: adenocarcinoma gástrico, gastrectomia, terapia nutricional oral com ênfase no pós-operatório, descritores em inglês: gastric adenocarcinoma, gastrectomy, oral nutritional therapy withem phasis on the postoperative period, e descritores em espanhol: adenocarcinoma gástrico, gastrectomía, terapia nutricional oral com ênfase no pós-operatório.Para a seleção dos artigos foram estimados os seguintes critérios de inclusão: artigos publicados na íntegra, sendo uma revisão bibliográfica, revisão sistematizada, meta-análise e ensaio clínico com abordagens focadas na terapia nutricional em pacientes com adenocarcinoma gástrico submetido à gastrectomia. Como critérios de exclusão: Teses, dissertações e publicações não condizentes à temática do trabalho.

Resultados: Deste modo dos 38 artigos pesquisados,foram identificados 8 estudosque atenderam os critérios de inclusão, envolvendo: o manejo nutricional pós cirurgia de gastrectomia em pacientes com adenocarcinoma gástrico. Os estudos analisados envolveram 963 pacientescom tempo médio de 10 meses de estudo.

Discussão: Os estudos relatam que o jejum Peri-operatório prolongado é uma prática comum nas equipes médicas, comprometendo a segurança alimentar e nutricional dos pacientes cirúrgicos. A prática alheia a fatores de risco nutricional, como idade, comorbidades e oferta dietética, indica a necessidade de revisão dos protocolos de jejum em hospitais brasileiros. Recomenda-se a adoção de protocolos que promovam a abreviação do jejum para melhorar a qualidade de vida, reduzir complicações e custos hospitalares, e promover uma recuperação mais eficiente e humanizada.

Conclusão: Esta revisão confirma os benefícios da abordagem à terapia nutricional a reintrodução precoce da dieta em cirurgias gastrointestinais. Os benefícios da nutrição oral precoce ainda são discutíveis, mas estudos já mostram que alimentação precoce até 48h pode ser benéfica, pois diminuem complicações infecciosas, permanência hospitalar, contribui para a cicatrização da anastomose e recuperação mais acelerada.

Abstract- Objective: To understand and identify the beneficial determining factors in nutritional intervention and management in the treatment of patients with gastric adenocarcinoma undergoing gastrectomy.

Method: This study was carried out based on searches in the PubMed, LILACS and SciELO databases, published between 2008 and 2023 in English, Portuguese and Spanish. The following descriptors were used in Portuguese: gastric adenocarcinoma, gastrectomy, oral nutritional therapy with emphasis on the postoperative period, descriptors in English: gastric adenocarcinoma, gastrectomy, oral nutritional therapy with emphasis on the postoperative period, and descriptors in Spanish: gastric adenocarcinoma, gastrectomía, terapia alimentacional oral com enfoque no pós-operativo. The following inclusion criteria were used to select the articles: articles published in full, including a bibliographic review, systematic review, meta-analysis and clinical trial with approaches focused on nutritional therapy in patients with gastric adenocarcinoma undergoing gastrectomy. The exclusion criteria were: Theses, dissertations and publications not related to the theme of the study.

Results: Of the 38 articles searched, 8 studies that met the inclusion criteria were identified, involving: nutritional management after gastrectomy surgery in patients with gastric adenocarcinoma. The studies analyzed involved 963 patients with an average study time of 10 months.

Discussion: The studies report that prolonged perioperative fasting is a common practice in medical teams, compromising the food and nutritional safety of surgical patients. The practice, which is oblivious to nutritional risk factors, such as age, comorbidities and dietary supply, indicates the need to review fasting protocols in Brazilian hospitals. It is

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recommended to adopt protocols that promote the abbreviation of fasting to improve quality of life, reduce complications and hospital costs, and promote a more efficient and humanized recovery.

Conclusion: This review confirms the benefits of the nutritional therapy approach and early reintroduction of the diet in gastrointestinal surgeries. The benefits of early oral nutrition are still debatable, but studies have already shown that early feeding up to 48 hours can be beneficial, as it reduces infectious complications, hospital stay, contributes to the healing of the anastomosis and faster recovery.

Keywords: gastric carcinoma, nutritional status, gastrectomy, nutritional support, prolonged fasting.

I. Introdução

O câncer gástrico (CG) é uma das neoplasias malignas mais comuns e apresenta alta mortalidade, é considerado um problema de saúde de grande importância, visto que é o quarto tipo de câncer mais incidente no mundo e o segundo tipo que mais causa mortes (Baú et al.,2013) Panduro-correa*et al.*, 2020, Machlowska*et al.*, 2020). São designadas como adenocarcinoma as células origináriasdo epitélio glandular que apresentam 95% de malignidade (Yakirevich; Resnick, 2013) O desenvolvimento do câncer gástrico é multifatorial, envolvendo tantos aspectos ambientais como genéticos. Tais fatores colaboram para a alteração da mucosa gástrica, e a substituição das células normais do estômago por células indiferenciadas, levando ao surgimento da doença (Baú et. al., 2013, Gonçalves et al 2022). Tornando-se a quarto neoplasia mais comum no Brasil entre homens e o sexto entre as mulheres, os tumores gástricos têm baixa expectativa de rastreamento, tornando o diagnóstico mais tardio e em fases mais avançadas da doença gerando um prognóstico ruim devido à impossibilidade de protocolos quimioterápicos atingirem a remissão completa da doença. (ZILBERSTEIN et al., 2013). Segundo Thoresen et al., (2002), 50 a 90% dos pacientes com câncer apresentam perda de peso e desnutrição, e a alta incidência de desnutrição se deve à localização do tumor. Diante de todas estas dificuldades de tratamento, a indicação cirúrgica na presença do adenocarcinoma gástrico passa a ser o principal tratamento com alta probabilidade de cura. Em alguns casos, para ressecção completa do tumor é necessário a retirada completa ou parcial do estômago. Os pacientes submetidos a esse tipo de ressecção podem apresentar alterações fisiológicas, que podem agravar progressivamente seu estado nutricional, como: síndrome de dumping, menor digestão proteica, redução na absorção de B12 e má absorção intestinal. Levando a um estado de desnutrição grave (INCA 2015; Laffitte et al., 2015). Segundo Waitzber DL. (2004) pacientes que realizavam gastrectomia, iniciam a ingestão oral durante três a sete dias do pós-operatório,

sendo comum o jejum prolongado em operações abdominais. Segundo estudos de Oliveira AR (2007) e Megan et al. (2011) a alimentação precoce até 48h pós-operatório pode ser benéfica, por promover uma recuperação mais acelerada e diminuir as complicações infecciosas. A reintrodução precoce da dieta é considerada segura, e pode acelerar a cicatrização, protegendo a anastomose de complicações, reduzindo o tempo de internação. O jejum prolongado, caracterizado por mais 24 horas sem administração de nutrição, seja ela por via parenteral, enteral ou oral, favorece mudanças no metabolismo, como: diminuição da massa muscular, que é um risco no aumento de complicações e tempo de internação (Tartari; Pinho 2011, Lieffers et al. 2012, Gustafsson et al. 2012). A carência prolongada de alimentos na luz intestinal gera atrofia de mucosa, podendo romper a barreira intestinal e promover a translocação bacteriana (Laffitte et al., 2015) . A desnutrição e a perda de peso são problemas comuns em pacientes oncológicos, uma vez que a fisiopatologia do câncer gástrico, acarreta uma cascata de sintomas (Zhang Y et al, 2019), geralmente associado a redução de ingestão alimentar (jejum prolongado, déficit energético), má absorção dos nutrientes, caquexia, consequência do grau da doença de base, além de complicações pós-cirúrgicas como: fístula e deiscências (Souza et al., 2017, Zhang Y et al, 2019). O monitoramento do estado nutricional no pós-operatório deve ser considerado no hospital e após a alta, especialmente após cirurgia no trato gastrointestinal superior, pois a ingestão oral normal de alimentos é diminuída durante vários meses (Wobith, Weimann, 2021). A dieta via oral deve ser modificada e adaptada às preferências e necessidades do paciente para manter a ingestão adequada de todos os nutrientes, minimizando a perda de peso e a piora clínica no pré e no pós-operatório, principalmente em condições adversas como diarreia, constipação, plenitude, mucosite, náuseas, entre outros. (INCA, 2015). A síndrome de dumping é um conjunto de sinais e sintomas que surgem logo após as refeições (Tack, Deloose. 2014), sendo provavelmente, a mais comum das síndromes em pacientes que passam por algum tipo de gastrectomia, tendo uma prevalência de até 50% em pacientes com gastrectomias parciais. (Loss, et al, 2014). Os sintomas da síndrome de dumping, podem ocorrer cerca de 10 a 30 minutos após a ingestão da refeição, levando a sintomas como dor e distensão abdominal, borborigmo, náusea, diarreia, e sintomas vasomotores, como fadiga, desejo de deitar-se após as refeições, rubor, palpitações, transpiração, taquicardia, hipotensão e, raramente, síncope. (Tack, et al, 2009). A terapia nutricional no tratamento síndrome de dumping, deve leva em consideração retarda o esvaziamento gástrico, mudanças simples na dieta como, realização de até 6 refeições dias, com menores volumes de alimento, evitar o consumo de líquidos

durante as refeições (até 30 minutos após a refeição), evitar o consumo de açúcares simples e produtos lácteos, consumo de proteínas para compensar o redução do consumo de carboidratos e consumo de fibras, demonstraram promover um tempo de trânsito intestinal mais longo (Hui; Dhakal; Bauza, 2023)

Ao avaliar a conduta mais eficaz para o bem-estar e qualidade de vida dos pacientes submetidos ao processo cirúrgico de gastrectomia, esta revisão sistemática tem como objetivo analisar os fatores determinantes benéficos na intervenção e manejo nutricional no tratamento de pacientes com adenocarcinoma gástrico.

II. Método

O presente estudo foi realizado a partir de pesquisas nas bases de dados PubMed, LILACS e SciELO, publicados entre os anos de 2011 e 2023 nos idiomas inglês, português e espanhol. Foram utilizados os seguintes descritores em português: adenocarcinoma gástrico, gastrectomia, terapia nutricional oral com ênfase no pós-operatório, descritores em inglês: gastric adenocarcinoma, gastrectomy, oral nutritional therapy withem phasison the postoperative period e descritores em espanhol: adenocarcinoma gástrico, gastrectomia, terapia nutricional oral com ênfase no pós-operatório. Para a seleção dos artigos foram estimados os seguintes critérios de inclusão: artigos publicados na íntegra, sendo uma revisão bibliográfica, revisão sistematizada, meta-análise e ensaio clínico com abordagens focadas na terapia nutricional em pacientes com adenocarcinoma gástrico submetido à gastrectomia. Como critérios de exclusão: Teses, dissertações e publicações não condizentes à temática do trabalho.

III. Resultados

Deste modo dos 38 Artigos pesquisados,foram identificados 8 estudos que atenderam os critérios de inclusão, envolvendo: o manejo nutricional pós cirurgia de gastrectomia em pacientes com adenocarcinoma gástrico. Os estudos analisados atenderam 963 pacientes com tempo médio de 10 meses de estudo. Na tabela 1 estão descritos os estudos que compõem essa revisão sistemática.

Tabela 1: Sumário Dos Estudos E Resultados Encontrados

Estudo	Pacientes Tempo De Estudo	Intervenção Nutricional	Desfecho/Resultado
Hoon Hur MD et al. (2011)	N.54 Grupo alimentação: 28 Grupo controle: 26 Tempo:7 meses	Grupo de alimentação: dieta líquida no segundo dia de pós-operatório e dieta pastosa a partir do terceiro dia até o dia da alta; Grupo controle: dieta líquida no quarto dia de pós-operatório.	Duração da hospitalização (P = 0,044) e o tempo até flatos (P = 0,036) no grupo inicial diminuíram significa-tivamente.Taxas de morbidade, sintomas pós-operatórios e escalas de dor, sem diferenças significativas. Escores de qualidade de vida diminuíram significativamente na fadiga (P = 0,007) e nas náuseas e vômitos (P = 0,048) imediatamente após a operação no grupo de alimentação precoce.
Jeong et al. (2013)	N. 170 Grupo caso: 74 Grupo controle: 96 Tempo:6meses	Grupo de estudo: nutrição oral pós-operatória precoce; Grupo controle: nutrição pós-operatória oral após 3-a 4 dias de jejum.	Grupo de estudo: Menor tempo de internação; Melhor aceitação da dieta em curto período; Aceitação de mais de 1/3 da dieta ofertada precoce-mente sem efeitos adversos; apenas, 11% apresentaram 1 desses sintomas: náuseas, vômitos anorexia, dor abdominal.
Costa et al., (2013)	N.271 Tempo:2meses	Avaliar os resultados clínicos pós-operatórios de pacientes submetidos à cirurgia abdominal	A redução do jejum pré-operatório não resultou em complicações respiratórias. Embora a aderência ao protocolo de abreviação do jejum não tenha sido alta, os resultados mostraram que quando isso foi prescrito houve redução do tempo de internação.

9

Estudo	Pacientes Tempo De Estudo	Intervenção Nutricional	Desfecho/Resultado
Liu Hong et al. (2014)	N.84 Grupo alimentação precoce: 40 Grupocontrole. 44 Tempo:24 meses	Avaliar o efeito da alimentação oral precoce no resultado pós-operatório de curto prazo de pacientes com câncer gástrico submetidos à gastrectomia distal laparoscópica.	Duração da internação hospitalar (6,28 ± 1,26 VS 7,69 ± 1,53, P P = 0,044) no grupo de alimentação precoce foram significativa-mente menores do que no grupo controle. Pontuação da escala de fadiga no grupo de alimentação precoce no sétimo dia de pós-operatório foi significativamente menor do que no grupo controle (33,9 ± 12,1 VS 45,1 ± 10,7, P = 0,041). = 0,048)
Laffitte, AM et.al. (2015).	N.41 Tempo:5 meses	Utilização de dieta precoce via oral (até 48 h) nos pacientes em pós-operatório de gastrectomia total e parcial demonstrando sua aplicabilidade na prática hospitalar	Pacientes que iniciaram a dieta precoce obtiveram menor tempo de hospitalização. A realimentação precoce no pós-operatório de gastrectomia total e parcial foi bem tolerada pelos pacientes.
Virgens, (2019)	N.77 Tempo: 12 meses	Verificar se houve diferença com relação ao tempo de jejum entre os pacientes que apresentaram ou não complicações pós-operatórias.	Para um melhor cuidado ao paciente submetido à cirurgia, sugere-se que a equipe médica adote protocolos de abreviação de jejum para promover maior conforto e diminuição de riscos para essa população.
Yi Xun Lu et al. (2020)	N.206 Alimentação precoce: 105 Estratégia de alimentação tradicional: 101 Tempo:23 meses	Avaliação do tempo de recuperação da função gastrointestinal e complicações pós-operatórias, estado nutricional pós-operatório, tempo de internação hospitalar e despesas	Em comparação com o grupo controle, os pacientes do grupo alimentação oral precoce tiveram: Tempo de primeira evacuação pós-operatório significa-tivamente menor (2,48 ± 1,17 d vs 3,37 ± 1,42 d, P = 0,001); Duração de hospitalização pós-operatória signifi- cativamente menor (5,85 ± 1,53 d vs 7,71 ± 1,56 d, P< 0,001);menores despesas de hospitalização pós-operatória (16,60 ± 5,10 K¥ vs 21,00 ± 7,50 K¥, P = 0,014).
Clark e Maranhão (2021)	N. 60 Tempo:4 meses	Investigar as características de jejum alimentar e hídrico de pacientes oncológicos no período perioperatório.	O jejum alimentar e hídrico ao quais pacientes oncológicos foram submetidos foramprolongados. A segurança alimentar e nutricional deve ser pautada como um direito a ser preservado também no ambiente hospitalar através da adesão institucional a protocolos multimodais de abreviação do jejum e aceleração da recuperação cirúrgica eficiente, humanizada e integral

IV. Discussão

O estudo de Laffitte et al., 2015, propõe o esquema de evolução de dieta líquida restrita com volume inicial de 700 ml no primeiro dia de pós operatório; no segundo dia de dieta líquida completa com volume de 1100 ml; e o terceiro dia de dieta líquida-pastosa com volume de 1450 ml, todas fracionadas em 7 refeições / dia permanecendo assim do quarto ao sétimo dia e evoluindo para dieta pastosa por 30 dias, dando continuidade ao seguimento da dieta em acompanhamento ambulatorial. Essa evolução ocorreu por meio de alguns critérios, como boa aceitação (maior que 75%) do volume ofertado e ausência de vômitos e internações no pós-operatório, determinando que a alimentação oral precoce após cirurgia curativa para câncer gástrico pode ser tolerada e se tem efeito na recuperação. No estudo realizado por Hoon Hur MD et al. 2011,os pacientes foram divididos em dois: grupo de alimentação precoce, iniciaram dieta líquida no segundo dia de pós-operatório e a seguir receberam dieta pastosa, a partir do terceiro dia até o dia da alta. Os pacientes do grupo controle iniciaram dieta líquida no quarto dia. O desfecho primário deste estudo foi a duração da internação pós-operatória. A alimentação oral precoce após gastrectomia para

câncer gástrico não foi aceita universalmente, mas viável e pode resultar em menor tempo de internação e melhorias em diversos aspectos da qualidade de vida no pós-operatório imediato. O estudo de Jeong et al 2013, também demostrou que a nutrição oral precoce não resultou em aumento significativo nas complicações, como fístulas, hemorragias, íleo paralítico ou obstrução intestinal, quando comparada ao grupo de dieta convencional.Com isso, concluiu-se que a nutrição oral precoce no primeiro dia pós-operatório após gastrectomia para carcinoma gástrico é segura e viável, sem aumento significativo no risco de complicações.No estudo de Liu Hong et al 2014, o tempo de internação e o tempo até a ocorrência do primeiro flato foram significativamente menores no grupo de alimentação precoce em comparação ao grupo de controle ou complicações, como infecção pulmonar, febre, infecção de ferida ou deiscência de sutura, entre os dois grupos, o grupo de alimentação precoce apresentou níveis mais baixos de fadiga em comparação ao grupo de controle, indicando uma recuperação pós-operatória mais confortável. Concluindo que a alimentação precoce após gastrectomia laparoscópica distal para câncer gástrico pode reduzir o tempo de internação sem aumentar as complicações e melhorar a recuperação do funcionamento intestinal. Segundo Yi Xun Lu et al 2020, o grupo de estudo de alimentação oral precoce apresentou menor tempo até a primeira defecação, teve tempo de internação menor e custos hospitalares menores, em comparação ao grupo controle. Não houve diferença significativa entre os grupos na incidência de complicações pós-operatórias, incluindo: fístula do coto duodenal, infecção de feridas, pneumonia e obstrução intestinal. Concluindo que a alimentação oral precoce após gastrectomia radical total laparoscópica para câncer gástrico foi segura e viável, sem aumento significativo no risco de complicações, promovendo a recuperação do funcionamento intestinal, melhora no estado nutricional pós-operatório e redução nos custos e tempo de internação. Já no estudo descritivo de coorte transversal de Clark e Maranhão de 2021,os resultados mostraram que apenas 6,7% dos pacientes cumpriram o jejum conforme a prescrição médica, enquanto 58,3% tiveram jejuns mais longos do que o prescrito. Além disso, a maioria dos pacientes relatou fome e sede significativas durante o jejum Peri-operatório, com relatos de intercorrências como tontura, náuseas e astenia. Concluindo que o jejum Peri-operatório prolongado é uma prática comum, comprometendo a segurança alimentar e nutricional dos pacientes cirúrgicos. A prática alheia a fatores de risco nutricional, como idade, comorbidades e oferta dietética, indica a necessidade de revisão dos protocolos de jejum em hospitais brasileiros. Recomenda-se a adoção de protocolos que promovam a abreviação do jejum para

melhorar a qualidade de vida, reduzir complicações e custos hospitalares, e promover uma recuperação mais eficiente e humanizada. Conforme estudo realizado por Virgens, 2019 para avaliar o tempo de jejum Peri-operatorio e sua relação com complicações em pacientes submetidos a cirurgias de ressecção de tumores no trato gastrointestinal. O tempo de jejum pré-operatório foi definido como o intervalo de tempo entre a hora da última refeição sólida ou líquida (exceto água) ingerida antes da cirurgia, até a hora da aplicação da anestesia. Nos dias seguintes após o procedimento cirúrgico o paciente foi acompanhado até o momento da liberação da dieta (oral ou enteral) por parte do médico responsável, e foi coletada a hora em que recebeu a primeira refeição líquida (exceto água), para o cálculo do tempo de jejum pós-operatório. Somente 33,8% dos pacientes foram alimentados nas primeiras 24h após a cirurgia. O estudo de Costa et al 2013 apresenta uma comparação de resultados clínicos de pacientes no pós operatório submetidos a cirurgias oncológicas analisando antes e após à implantação do protocolo ACERTO (ACEleração da Recuperação TOtal Pós-Operatória) (AGUILAR-NASCIMENTO et al., 2009). Foram estudadospacientes, submetidos ao ratamento cirúrgico oncológico, sendo observados e comparados os submetidos à condutas convencionais de acompanhamento peri-operatórias e outro grupo submetidos ao novo protocolo de condutas de acompanhamento peri-operatórias estabelecidas pelo projeto ACERTO. Sendo possível concluir que a utilização do protocolo, que é baseado em evidência, é seguro. Não houve aumento de mortalidade e nem do tempo de internação, complicações respiratórias, tais como aspiração de conteúdo gástrico e nem pneumonia química.

V. Conclusão

Levando-se em conta os dados coletados, dos artigos revisados, conclui-se que a abordagem nutricional precoce e bem planejada no pós-operatório de gastrectomia por adenocarcinoma gástrico, pode contribuir para uma recuperação mais rápida, reduzindo complicações, tempo de internação hospitalar e melhorando a qualidade de vida do paciente. No entanto, é crucial que essas intervenções nutricionais sejam personalizadas e adaptadas às necessidades individuais, levando em consideração fatores como estado nutricional prévio, extensão da cirurgia e presença de comorbidades. Além disso, são necessários mais estudos para avaliar a eficácia em longo prazo dessas intervenções e seu impacto no prognóstico e na sobrevida dos pacientes com adenocarcinoma gástrico submetido à gastrectomia.

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Patient Safety: Everyone's Life Matters

By Bachchu Kailash Kaini

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Abstract- Adverse events are still one of the major issues for healthcare organisations even though many initiatives have been launched in the past for patient safety. There are many reasons of patient safety incidents and avoidable harms to service users, such as human factors, medical factors, system wide problems, lack of technology, poor communication and teamwork. By developing and implementing proper system, effective teamwork, good communication channels and means, standardised procedural documents, patient safety training and education programme, healthcare professionals and institutions can deliver safe patient care and improve the quality of healthcare.

Keywords: patient safety, healthcare system, technology, teamwork and communication.

GJMR-K Classification: LCC Code: RA971

PATIENTSAFETYEVERYONESLIFEMATTERS

Strictly as per the compliance and regulations of:

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I. Introduction

Safe delivery of healthcare is a prime objective of everyone involved in the delivery of health services. Patient safety is influenced by a variety of factors, including the healthcare system, the environment and the individual service user. It encompasses the identification and reduction of risks to service users, as well as the promotion of safe and effective healthcare in any settings.[1]

According to Napier and Youngberg 'the purpose of patient safety is to provide a safe environment, to explore the possibility of failure, and to create defences that will change the current system of operation in order to reduce the potential for failure'. [2]

Patient safety can have a significant impact on the health and well-being of health service users. According to a report by House of Commons in the UK it is estimated that as many as 10% of patients admitted to hospital suffer some form of harm, much of which is avoidable.[3] This harm can range from minor injuries to death. Health service users who suffer from at least one adverse event are double as likely to die during their hospitalisation.[4]

A report '*The Economics of Patient Safety from Analysis to Action*' published by the Organisation for Economic Co-operation and Development highlights that over 10 per cent patients continue to be harmed from safety lapses during their care and unsafe care results in well over three million deaths each year globally.[5] The report further highlights that the health burden of harm is estimated at 64 million Disability-Adjusted Life Years (DALYs) a year, similar to that of HIV/AIDS and most of this burden is felt in low-to middle-income countries (LMICs). It further continues to estimate that as many as four in 100 people die from unsafe care in the developing world. This fact is alarming and highlights an urgent need to address by the health authorities around the world.

Patient safety is a costly issue, costing the global healthcare system billions of dollars each year. It is one of the major public health and hospital care problems.[6] World Health Organization (WHO) in its report '*The Conceptual Framework for the International Classification for Patient Safety*' published in 2009 defines that 'adverse healthcare-related events as incidents that occur during medical care and harm a patient, producing an injury, suffering, disability, or death'.[7]

Patient safety is not new to healthcare professionals and the health system. It is a critical and complex issue that affects service users, healthcare professionals and the healthcare system and requires multi-disciplinary approaches. The Institute of Medicine in the USA in its well-received report '*To Err is Human: Building a Safer Health System'* analysed wide ranges of patient safety issues and stated that there were many patient safety problems in every type of healthcare setting.[8] The report highlighted the need for improvement in healthcare delivery system to close gaps and save lives. Through the implementation of patient safety policies and improvement in healthcare systems, healthcare organisations are safer today than in the 1990s or before.[9]

The cost of adverse events and patient safety issues is not just financial. These issues can also have a significant impact on service users' quality of life by the harm of physical injuries, emotional distress, and financial hardship, amongst many others. To address these issues, healthcare organisations, authorities and professionals around the globe need to focus on developing proper systems, including appropriate technology, proper communication means or channel, great teamwork, standard procedural documents, education and training programme to mitigate the risk of avoidable harms to service users.

II. Healthcare System

The WHO has highlighted the importance of safe and effective delivery of healthcare around the world by developing systems and guidelines. This has

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been evident by creating 'The World Alliance for Patient Safety'[10], by developing 'WHO Patient Safety Curriculum Guide for Medical Schools'[11], publishing technical series on 'Safer Primary Care'[12], 'Surgical Site Checklist'[13], and developing 'Guidelines for Adverse Event Reporting and Learning Systems'[14], few important initiatives to highlight.

Another example is promotion of 'Universal Health Coverage' (UHC) which has emerged as a key theme and priority for the WHO. The UHC highlights the provision of accessible, safe and effective primary care is fundamental requirement to meet this important international policy goal by its member states.[15]

Patient safety incidents often occur when there are problems in the healthcare delivery system. Good examples of these kinds of problems are shortage of healthcare professionals or lack of adequate staff, no provision of regular or refresher training, miscommunication, lack of information, no protocols or guidance etc. Therefore, healthcare organisations, professionals and authorities responsible for healthcare delivery should focus on identifying and addressing the underlying causes of patient safety incidents. This approach helps to mitigate the risk of harm due to patient safety incidents which are often caused by factors within the healthcare delivery system.

III. TECHNOLOGY

Technologies such as automated decision-making support systems, telehealth, electronic patient record and automatic data capture technology could make substantial improvements to care.[4] It can be used to communicate between healthcare professionals and service users in many ways and provides real-time feedback to service users, healthcare professionals and institutions. Moreover, technology helps to prevent patient safety incident.[5,13] It was found that digital health platforms such as Clinical Decision Support (CDS) and Result Notification Systems (RNS) tools help to reduce diagnostic error and improve diagnosis in exploratory and validation studis.[16]

In the context of developing nations, telehealth is widely used to provide regular and follow up health services where health services are not easily accessible. The WHO's report 'Safer Primary Care' highlights that effective and safe delivery of primary care should be priority of every nation and healthcare authorities around the world.[12]

IV. TEAMWORK

Avoidable adverse events are common in healthcare organisations. It is suggested that avoidable adverse events are good to look at and tackle to achieve quality improvement targets through teamwork and patient safety initiatives.[4]

Teamwork is essential for safe and effective delivery of healthcare. It is an underlying element of safety culture and essential for ensuring that service users receive the care they need. If healthcare professionals and workers understand and apply the principles of teamwork, work as a great team and provide reliable care, it is assumed that it helps to deliver safe and effective patient care.[17] It was reported that there were reductions in adverse events such as hospital acquired infections (HAIs) because of teamwork.[16]

There are many benefits to teamwork in healthcare settings. Some of the most important benefits include improved communication, increased awareness of risks, reduced errors and improved patient outcomes.[18,19]

There are many ways to promote teamwork in healthcare settings for the safe and effective delivery of healthcare. Some of the most important ways to improve teamwork include creating a culture of safety, providing training on teamwork, creating opportunities for teamwork, recognising and rewarding teamwork, and being clear about roles and responsibilities in a team. By promoting teamwork, healthcare organisations can create a safer environment for service users, healthcare professionals and improve patient outcomes.

V. COMMUNICATION

Different levels and categories of healthcare professionals have different levels and types of knowledge, skills and expertise. Each member of the healthcare team should feel comfortable communicating with each other, even if they have different levels of experience or expertise. They also should treat each other with respect, even when they disagree.

It found that studies of simulation-based education curricula for doctors and nurses report improvements in clinical safety process and clinical outcome measures in healthcare organisations.[16] One study by Leonard et al highlighted that the effective and good communication between healthcare professionals, service users and carers is one of the important factors for providing safe healthcare.[17]

VI. STANDARDISED PROCEDURAL DOCUMENTS

Standardised approach to care is very important for better clinical outcome, safe delivery of healthcare and improving patient experience.[5,20] Procedural documents such as standard operating protocols (SOPs), guidance, policies, guidelines and procedures provide guidance to healthcare professionals for standardised approach to care. The use of procedural documents in healthcare settings

reduce errors, increase efficiency and improve communication.

Procedural documents should be easy to understand and follow, concise and clear. Moreover, they should be reviewed and updated to reflect the most recent practices or guidance and to ensure that they are accurate and up to date. By developing and implementing procedural documents, healthcare professionals and institutions can deliver safe patient care and improve quality of healthcare.

VII. HUMAN FACTORS AND PATIENT SAFETY

Healthcare professionals are human being. Human beings live with their emotions. Emotions are integral, important and powerful parts of human beings. Human errors are natural while working in any set up and it is more important when healthcare professionals work for sick and unwell patients around the clock in difficult circumstances.

Human factors and errors are a major cause of adverse events and harm in healthcare settings. They can occur at any stage of the patient care process in healthcare settings, from diagnosis to treatment to discharge.

Hallinan in his book 'Why We Make Mistakes', examined various factors that contribute to human errors and explained why errors in any setting continue to occur. Some of the points Hallinan highlighted are distractions, interruptions, fatigue, shortcut we take in the delivery of services etc.[21]

There are many different types of medical errors that can lead to patient harm. Some of the most common types of errors include medication errors, diagnostic errors, communication errors and surgical errors.[22]

Human errors can have a devastating impact on health service users and their families. They can lead to pain, suffering, disability, and even death. There are several things that can be done to reduce human errors and improve patient safety. Some of the most important things include training, standardised procedures, use of appropriate technology and promotion of safety culture.

VIII. MEASURES TO MINIMISE RISKS

Reducing adverse incidents in healthcare and action to improve quality of care by focusing on patient safety require transparency, accountability, great leadership, effective communication, political will, investment, technology and a strong health system.[1,4,5]

According to Ankowicz 'understanding and accepting our humanness and how it affects our work environment is an important step in understanding our ability to apply solutions to prevent unintentional patient harm'.[23]

Healthcare institutions and healthcare professionals can take many initiatives to improve patient safety and to prevent unintended harm to service users. Some of the examples of great initiatives with little resources are implementing safety checklist, developing protocols and guidance, staff training on patient safety, implementing adverse incident reporting and learning system, creating a safety culture, use of technology, improving patient engagement, empowering service users etc.[2, 6, 14, 13]

By continuously improving health services and taking steps to prevent adverse events and incidents, healthcare professionals and institutions can create a safer environment for patients and improve patient outcomes. Health service users can also play an important role in their own safety and wellbeing by asking questions, being involved in their care, and reporting any concerns they have. Sometimes by following simple steps and preventive tips, patient safety incidents can be reduced in healthcare settings.

IX. SUMMARY

The issue of patient safety is getting more attention in developing nations in recent years. Safe delivery of healthcare should be a priority for everyone in the healthcare delivery system. Healthcare professionals, institutions, patients, their families, carers, healthcare managers and administrators have a role to play in preventing patient safety incidents or avoidable harms and to ensure that service users receive the highest quality of care. There are many ways to minimise patient safety risk and harm to service users. Collaborative approaches between healthcare professionals, service providers, service users and carers are required to improve quality of care, which includes safe delivery of care, clinical effectiveness and improving patient experience. Everyone's life matters in the healthcare delivery system and everyone deserves to receive safe, effective and highest quality of care.

Conflict of Interest: None

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How the Artificial Intelligence Whit a Neural Networks and Rules based System are used to Find a Correlations, and therefore try to Maintain ED Improve the State of Health, in Patient Affect by Multiple Sclerosis at the Origin of the Food taken by the Patient

By Francesco Pia

Abstract- In this work we want to address an Artificial Intelligence problem related to human nutrition, in the case of MS, which can be myelinating or demyelinating according to inputs that are to be considered "pseudo-cybernetic" at a low level and of natural origin, i.e. foods that can be myelinating or demyelinating as already mentioned. Thanks to the use of NNs, it is possible to build a system that highlights the response of the human body to natural inputs; such foods are therefore easy to find, with low costs and without dynamometers for the measurement of the musculoskeletal response of the human body that can be self-assessed by the subject who is subjected to this diet.

The data search is conducted on the volatile web, not punctual, not necessarily found on specific sites but made to emerge from the browser in use in a summary form.

Keywords: food, myelinating, demyelinating.

GJMR-K Classification: NLMC Code: QU145

HOWTHEARTIFICIALINTELLIGENCEWHITANEURALNETWORKSANDRULESBASEDSYSTEMAREUSEDTOFINDACORRELATIONSANDTHEREFORETRYTOMAINTAINEDIMPROVETHESTATEOFHEALTHINPATIEN
TAFFECTBYMULTIPLESCLEROSISATTHEORIGINOFTHEFOODTAKENBYTHEPATIENT

Strictly as per the compliance and regulations of:

How the Artificial Intelligence Whit a Neural Networks and Rules based System are used to Find a Correlations, and therefore try to Maintain Ed Improve the State of Health, in Patient Affect by Multiple Sclerosis at the Origin of the Food taken by the Patient

Francesco Pia

Abstract- In this work we want to address an Artificial Intelligence problem related to human nutrition, in the case of MS, which can be myelinating or demyelinating according to inputs that are to be considered "pseudo-cybernetic" at a low level and of natural origin, i.e. foods that can be myelinating or demyelinating as already mentioned. Thanks to the use of NNs, it is possible to build a system that highlights the response of the human body to natural inputs; such foods are therefore easy to find, with low costs and without dynamometers for the measurement of the musculoskeletal response of the human body that can be self-assessed by the subject who is subjected to this diet.

The data search is conducted on the volatile web, not punctual, not necessarily found on specific sites but made to emerge from the browser in use in a summary form.

One of the aspects that must be considered is that this work does not intend to give a precise, exhaustive, untouchable indication of the eating habits of the people involved. For example, someone may really like a food that is given as demyelinating and would eliminate it from his diet, but it would be good for him in other ways. So everyone is free to interpret the indications that the intelligent system will give him at his convenience and pleasure and that's it because he could find some food, some myelinating foods that give him more strength than others, so if it doesn't cost him anything to replace it or integrate it, so much the better.

Keywords: food, myelinating, demyelinating.

I. Introduction

Thank you so much for your time. I have always studied, as a child, and with over a dozen works in which he is the sole author, [1]-[13], and is himself suffering from a secondary progressive *nrMSPS* form of MS that is blocking him as well as many patients and families around the world. He opened a fundraiser on "*www.gofundme.com*" with keyword "*Artificial Intelligence vs Multiple Sclerosis*" and in addition to thanking you, the author will make every effort to ensure that the funds raised are spent on the next steps which are certainly expensive.

- *Step 1:* Doing sports, fitness and any activity with your body

- *Step 2:* Stem cell implant, after medical opinion from different bell towers
- *Step 3:* Assumer TOLEMABRUTINIB® OF SANOFI®, hoping my neurologist agrees, I'm waiting anxiously.
- *Step 4:* Resorting to the intermittent diet.
- *Step 5:* Use, with the help of a nutritionist, mainly myelinizating foods.

In this work we want to address a problem with AI related to human nutrition that can be myelinating or demyelinating according to dietary inputs.

These inputs are to be considered "pseudo cybernetic" at a low "machine" level but of natural origin that can be for or against myelin. Thanks to the use of NNs, it would be possible to create a system that highlights the response of the human body to easily available natural inputs, without machinery and without weight gauges, only thanks to the musculoskeletal response felt by the human body that can be evaluated by the subject who is subjected to this diet.

The data search was performed on the "volatile" WEB, that is, the type of information that is not necessarily found in specific sites, so no one will be thanked except the various browsers that bring them to light and therefore there will be no bibliographic references or authors and their works.

One of the aspects to consider is that this work does not intend to give a precise, exhaustive or untouchable indication of people's eating habits. Why can a person really like a food that is given as a demyelinating agent, and would eliminate it for example, while instead it would be good for him in other ways. So everyone is free to interpret the indications that the intelligent system will give him at his convenience and pleasure and that's it; because he could instead find food with myelinating elements that give him more strength than others; therefore, if it doesn't cost him anything to replace them, or integrate them, so much the better. We repeat, therefore, that the data used in this work are those that are represented by browsers without entering into the specifics of particular bibliographic references: this type of data is called, in this work "volatile"; that is, high level information, not low level (which would mean that one would have the

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19

obligation to eat... as one could find in the bibliography that there is this particular food...), finding this data it will be the user's responsibility to put them into the system and process them at his convenience according to the nutritionist's instructions.

In essence, therefore, man is seen as a cybernetic system, natural, fed with input, at a low level and programmed because the diet is in any case a nutritional reprogramming of the human body whose results are deduced by the user himself who feels a possible benefit or not..

The foods considered are divided into two categories: remyelinating and demyelinating. Therefore, very few elements are considered as it is only a system that can receive modifications and expansions..

The scheme used is the so-called "*seed of discernment [12]*"; that is, the use of two NNs, which interconnected, allow to give answers based on the nuanced representation of the inputs, where the answer is the advantage or otherwise that the user can report. This scheme is present in *[12]* where the same type of approach is used, however, with blood tests; in this work, no laboratory tests will be performed, but reference will be made to the state of well-being described by the user.

Among the rare substances, sulphuring, being myelinating, can produce actual myelin repair. The natural molecule, sulphuring, blocks the activity of an enzyme that is overactive in areas of myelin damage. This same enzyme also contributes to the growth and spread of tumour cells, meaning the discovery has implications beyond MS. Study co-author Angela Hoffman, a retired professor at the University of Portland who had examined the almost unobtainable plant-based hyaluronidase inhibitors, and Steve Bryson & colleagues at Oregon Health & Science University say it is very likely that the plant-based molecule is able to promote the growth of myelin-producing cells *[14]*.

And to think that our human body contains about 21 mg of Potassium 40, which is β radioactive and emits neutrinos (objects known to be cosmic) we emit about 400 million neutrinos a day; there would be nothing strange that it repairs itself, that it implements remedies to certain problems with the right stimulations. In this work we take as stimuli the food that we divide into two groups: remyelinating and demyelinating, the first helps myelination or that not only does not help it but damages it. We would like to use Artificial Intelligence to verify if this reasoning is coherent. With this we do not want to question or highlight foods that are normally taken by those who are well; such as obviously cereals for many people, however the foods that the network indicates as such and do not help this remyelinating are considered myelinating, only this. Therefore the research, developed for the present work, is also slightly superfluous since for the simulation it

would have been enough to insert foods, as they say, generic for example from the Mediterranean diet; however divided into categories: this is important because this system consisting of two Neural Networks create the so-called "Seed of Discernment" used in *[12]*: the first work where MS is studied thanks to AI.

Considering the paradigm: move and you will move, stand still and you will stay still; we are, in a certain way, considering the metabolization of food, that is, burning the fuel that is given to it. So this paradigm can also be used as an input, in the sense that with any type of diet, drug etc. etc. if you don't exercise it all becomes useless; in the sense that if you take a "new drug" and do not follow up with adequate physiotherapy it becomes almost useless. Instead, if we consider physical activity as remyelinating and standing still as demyelinating, we can consider them as inputs, just like food, that is burned by movement. There would be nothing wrong, to imagine, that since a myelinating food is introduced and is not burned it does not go into circulation, it is digested as food and that's it; instead, if metabolized it is more likely to have an advantage.

II. A Little Corner of Matrix Algebra

From the following table tab.1 a square matrix can be extracted in order to obtain a function that highlights the trend of the new days, compared to the average of the days passed, of which the average will be calculated. The matrix can be constructed square by merging rows with low dietary impact (for example) and adding columns that take into account the response of the various parts of the patient's body subjected to the diet and others that are not linearly dependent on the previous ones, useful for describing the patient's health status.

Here's how you can proceed:

Given the original matrix $\begin{bmatrix} Q \end{bmatrix}$, a random reallocation of its various cells is carried out, obtaining $\begin{bmatrix} \overrightarrow{R} \end{bmatrix}$ of which we would calculate the average and normalization.

I then subtract that of the new day of the same patient $\begin{bmatrix} \overline{G} \end{bmatrix}$:

$$\overset{1 \rightarrow j}{\begin{bmatrix} \overline{R} \end{bmatrix}} - \overset{j+1 \rightarrow i}{\begin{bmatrix} \overline{G} \end{bmatrix}}$$

$(j+1 \rightarrow i)$ *for any days more than one; from which we can calculate:*

$$(a) \quad \begin{bmatrix} P \end{bmatrix} = \nabla \left(f \left(div \overset{1 \rightarrow j}{\begin{bmatrix} \overline{R} \end{bmatrix}} - \overset{j+1 \rightarrow i}{\begin{bmatrix} \overline{G} \end{bmatrix}} \right) \right) \begin{cases} > \\ = \\ < \end{cases} 0 \quad ^{*?1}$$

After proper reallocation to the original cells of patient:

$$(b) \quad \begin{bmatrix} \overleftarrow{P} \end{bmatrix}$$

$$(c) \quad \begin{cases} > & 0 & \text{perhaps it has a negative impact} \\ = & 0 & \text{it's almost indifferent} \\ < & 0 & \text{perhaps it has a positive influence} \end{cases}$$

From the examination of (c) we can use NNs to get more information, we call NNhope a neural network with multi-layer perceptron architecture with three layers and back-propagation learning algorithm with inputs and outputs equal to the number of cells of the matrices used so far and trained " *artfully* " to recognize what are the hypotheses, for better or for worse, examined so far on the myelinating diet or not with advantages, or less, on the various musculoskeletal districts examined for each patient subject to the diet.

Using the following scheme we will have to obtain more and more detailed information on how to adjust the diet to follow:

$$\begin{bmatrix} \overleftarrow{P} \end{bmatrix} \Longrightarrow \boxed{\begin{array}{c} \text{Neural Network} \\ \text{Back Progation} \\ \text{NNhope} \end{array}} \Longrightarrow \begin{bmatrix} hope \end{bmatrix} \qquad (c)$$

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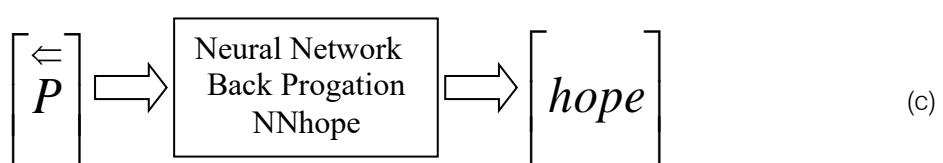
1 *? The use of certain mathematical operators, matrix ones, and not others, has as its objective the obtaining of a scalar; it would probably be sufficient to use only the calculation of the determinant of the matrix which is the argument of the operator.

From the examination of the matrix [hope] the salient data can be reported to the nutritionist and neurologist for the corrections of the case and the various conclusions. The undersigned follows, not at 100%, the indications reported in table 1 and are not detecting worsening but very slight improvements that fall within the fluctuating clinical picture of multiple sclerosis, however the results are expected in the long term. It is believed that this approach will most likely give positive and more visible results in mild forms and in newly diagnosed than in those who have been affected \ for years by the nrSPMS form like the undersigned who after the end of this work in addition to continuing the diet will dedicate himself more to rehabilitative physiotherapy and physical exercise

III. Methods and Tools

This paragraph will describe the main scheme of the setup that will be used, also in the next works and the present one which mainly describes the idea, and the second one which involves the use of neural networks and the drafting of an algorithm especially by virtue of the fact that the patients will be virtually encapsulated while the third will be much more challenging because the use of "*real*" patients; at this point in the exposition it is not easy to use real patients.

In the following figures everything is particularly "simplified" because only the preliminary project that will be described is represented, represented in the figures fig. 1, 2. All this is obviously simple compared to the scale of the overall project. As said in the introduction, it is not very useful to describe in depth these blocks that are part of the drawings represented in fig. 1 and 2 because the difficulties that will be encountered will not be few and above all the methods used to describe and realize the various components will not be simple, and the type of representation and its representation is unpredictable.
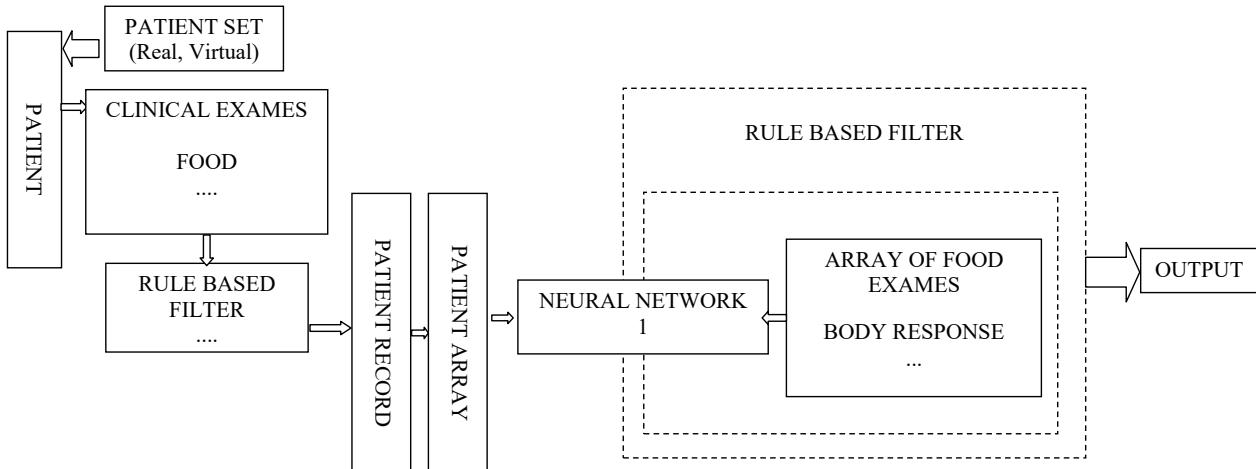

Fig. 1: This Figure Represents the Original Idea to Train a Neural Network to Distinguish an MS Patient from a Healthy One, as well as "Memorizing" the Cases Seen in Training

Tab. 1: This Table Represents the "I-Th" Patient

Patient$_i$		Diet$_i$	Response	Example of A Rule Indicated by the Nutritionist
Food$_i$	My/Demy	Rules/Grams	Diet$_i$	
Dried fruit	My	rule$_1$		...
animal proteins	My	rule$_2$		0≤20[g]
Fruits and vegetables	My	rule$_3$		...
Sulphuretin	My	rule$_4$		...
Fish + Ω$_3$	My	rule$_5$		...
Ω$_3$	My	rule$_6$		...
Biotin	My	rule$_7$		0≤400[mg]
Vitamins B1, B2, B3, B5, B6, B12, C, Niacin	My	rule$_8$		...
Legumes	My	rule$_9$		...
			R$_i$	
Grape seeds	MY/DEMY	rule$_{10}$		...
Salt	DEMY	rule$_{11}$		0
Sugar	DEMY	rule$_{12}$		0
Butter	DEMY	rule$_{13}$		...
Oil	DEMY	rule$_{14}$		
Refined foods	DEMY	rule$_{15}$		...
Beer	DEMY	rule$_{16}$		0
Dairy products	DEMY	rule$_{17}$		...
pork sausages	DEMY	rule$_{18}$		...
Cereals	DEMY	rule$_{19}$		...
Carbohydrates	DEMY	rule$_{20}$		...
1≤PATIENT$_i$≤30	2100 KCal	rule$_i$ 0≤KCal$_i$≤g$_i$	Response 0≤R≤1	

$$\sum_{i=1}^{20} KCal_i \leq 2100[KCal]$$

Many foods, such as legumes "*for example*", are very healthy if present in the diet but the effects on myelin are not known, this fact we here would call the "*bean problem*"

For The patients' response is certainly subjective, but the intelligent system will most likely be able to give useful indications for MD clinicians will be used, hoping to limit the number of inputs, and since they are numerous, it will be necessary to ensure that the NN *[6], [12]* has a variable and selectable range for the inputs.

At this point in the simulation, it is recommended to use 10 patients for the system training phase, 10 for validation and 10 for testing.

At this point the first neural network should be able to associate food with the response of the sick patient at the onset of multiple sclerosis, but this is not what we would like only. In fact, thanks to the second NN, the most myelinating foods and their quantity to be taken daily should be noted with the supervision of the nutritionist and the neurologist. The following figure further highlights the potential of diet-patient matching highlighted in Figure fig. 1. The male/female ratio is an important factor for patient selection and the impact of MS, which must be represented in the patient population and therefore will be implicit in the selected sample.

As for training, validation should be done on MS patients, while for the testing phase it would be interesting to insert some patients with variable expressed parameters in the simulations: *new*, *old* and *healthy*, to try to represent the whole population. Over-fitting should be avoided by shifting the just evoked parameters and their respective inputs and by a somewhat broader representation of the output and inputs.

The following figure fig. 2 shows the system just exposed; that is, a system able to indicate significant parameters to be provided to the clinician with the totality of patients and simulated data thanks to *Tab. 1*.
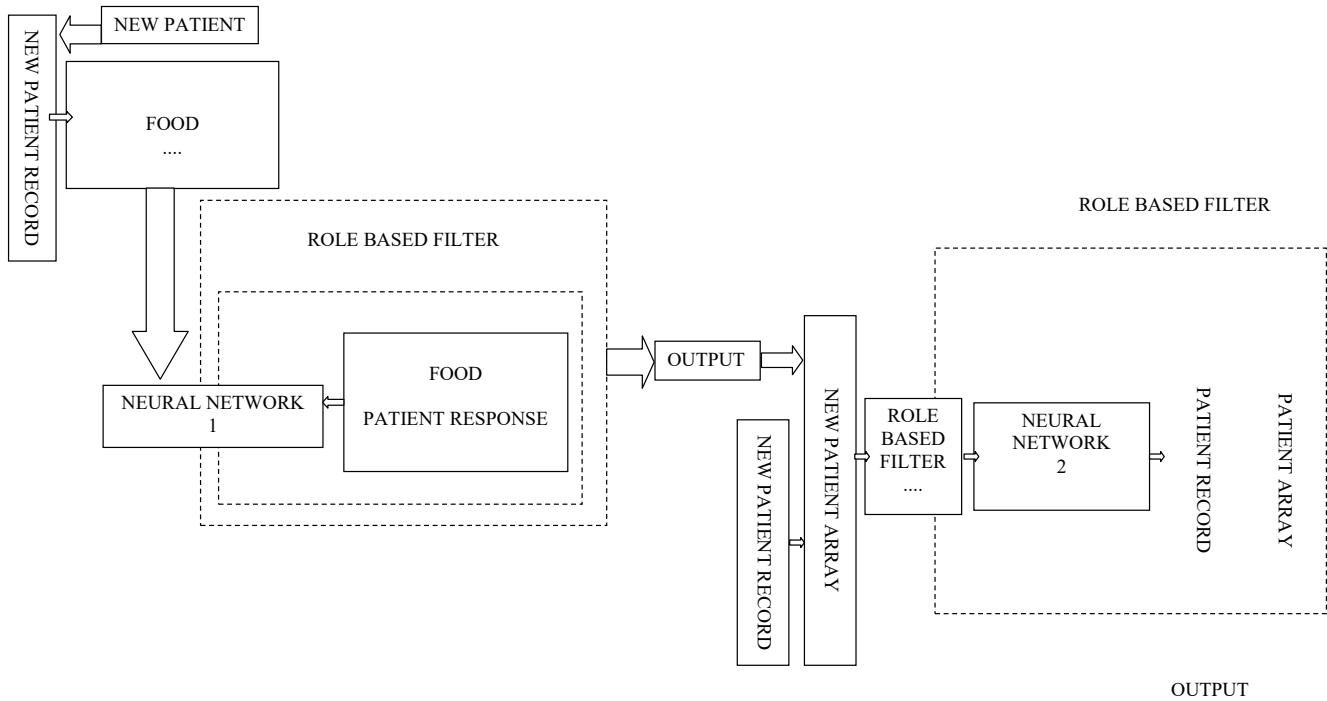

Fig. 2: This Figure Represents the Second Part of the System Which Could Give Important Indications to the DIET

To clarify, training can be done on "newly diagnosed" patients and validation on those "diagnosed not long ago" the Test is a somewhat nuanced middle ground, a bit of the first group and a bit of the second, assuming that the system in fig.1 is able to distinguish a healthy patient from a sick one by his diet, then we ask ourselves where the information resides?

The information and the result of the correct training of the NN n°1 of the successful learning of the diet-patient pairing; and up to this point after having carried out the training: then an average of the input vectors of the arrays of the patients and their diets is made and the significant food could be hidden, in truth the input of interest appears: then a new case is presented and at this point the network will say the most mylinizating diet and the difference is made between the representative vector of the new case minus the average of the patients, then we will see what are the variables in play that determine this difference between the representative vectors. The schemes proposed in fig. 1 and 2 should be considered a common place that can also be used for other pathologies, this aspect is very important to underline.

IV. Conclusion

Since we intend to proceed, at the end of this mainly descriptive work on the idea of using NNs, other steps are substantially planned that will concern the introduction of over-the-counter drugs into the entrances and then prescribed by the neurologist and with a lot of work to do. Once the correct functioning of the virtual encapsulator of the patient and the entire system has been verified, and the presence of sufficient funds has been verified, to then try to concretely implement the procedure that should answer, in part, the question of the title of this work, thus giving indications to clinical doctors who are experts in the sector covered in this article.

The undersigned, who has been following this diet for a month and more, has noticed great improvements, even if... due to autosuggestion. After all, due to waiting for drugs that never arrives: there's no harm in trying. Funds are needed for software simulations and the undersigned, in addition to making himself available, strongly recommends contacting competent doctors in the various fields of medicine. And like many things in the life of those affected by MS, even a diet must not deprive us of a few moments of happiness. For example, a pizza party with friends (pizza and beer): two non-myelinating foods and we do not participate, aware or not we are not happy but sad and depressed by the renunciation. Such suffering could make us lose the results obtained after months of myelinating diet: the diet should perhaps be faced with a serene, friendly spirit, like the life of a patient, and not only, of MS. We would say balance and serenity: therefore a yes with moderate behavior to pizza and beer with friends.

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The Chemoperception of Primary Flavors and its Relationship with Adiposity in Young Adults

By Dulce María Soria-Lara

University of Guanajuato

Abstract- Objective: To study the influence of adiposity (measured through anthropometric parameters) on men and women's perception of basic taste sensations.

Method: A quantitative cross-sectional study was conducted that evaluated anthropometric parameters and chemoper-ception levels for sweet, salty, sour, umami, bitter, astringent and overall flavors in 22 university students from the city of Celaya, Gto., Mexico.

Results: Subjects were classified into four groups according to their anthropometric parameters (BMI, WHR, and FHI) and gender: men with adequate adiposity (AA), men with inadequate adiposity (IA), women with AA, and women with IA. Anthropometric differences were assessed using Student's t-test, while patterns between flavor perception and anthropometric indices were analyzed using correspondence analysis. Pearson correlation was used to confirm the relationship. Results indicated a higher prevalence of adiposity in men compared to women. Furthermore, in women, excess adiposity influenced the perception of sour, salty, umami, and astringent flavors. In the case of men with IA, statistically significant alterations were observed in the perception of bitter and sweet flavors.

Keywords: dysgeusia, flavor, food conditioning, Mexico, obesity, taste sensation.

GJMR-K Classification: NLMC Code: WD210, QV107

THECHEMOPERCEPTIONOFPRIMARYFLAVORSANDITSRELATIONSHIPWITHADIPOSITYINYOUNGADULTS

Strictly as per the compliance and regulations of:

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Dulce María Soria-Lara

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Conclusions: Excess adiposity affects the perception of basic tastes. Furthermore, depending on the distribution of adiposity (type of obesity), the impact varies between men and women, with women being more susceptible to dysgeusia associated with excess adiposity. These findings suggest that the ability to perceive tastes could be related to receptors that also influence the regulation of adiposity.

Keywords: dysgeusia, flavor, food conditioning, Mexico, obesity, taste sensation.

I. Introduction

The senses (taste, smell, sight, hearing and proprioception) contribute to the identification of foods and determine their reward levels or "hedonic" characteristics, for this reason, the responses of the sensory receptors influence both the stimulation and the inhibition of food intake (Hetherington et al., 1989).

Taste is a complex sense that detects a wide range of chemical molecules but translates them into a limited number of distinct perceptions called flavors, such as sour, salty, sweet, bitter, and umami (Shimemura et al., 2016). These perceptions influence the acceptability of food and play a crucial role in human survival. Furthermore, their impact extends to overall health (Feeney et al., 2011). However, some theories suggest that differences in taste perception have a neuronal origin and are influenced by factors (such as sex, age, ethnicity) that are the key to guiding future research on the pathophysiology of taste perception in humans (Leigh et al., 2018).

Despite it is well accepted that all medical conditions associated with pathologies require dietary adjustments, little has been studied in depth regarding the relationship between the physiological, anatomical and sensory changes inherent to diseases and how these influence food choices or alter dietary patterns (Ng et al., 2004).

And although there is indeed no clear neurophysiological mapping of taste alterations associated with medical conditions, there is evidence that this sense is affected in various diseases such as cancer and inflammation (Schalk et al., 2018), hypertension (Fallis et al., 1962), and diabetes mellitus (Fabbi, 1954).

In parallel and for several years, excess body fat (adiposity), reflected in terms of overweight or obesity, has become a medical condition of utmost importance as it is a cause of comorbidity, as well as a risk factor for the development of many chronic non-communicable diseases (NCDs) (Safaei et al., 2021).

Possible differences in sensory response between people of different body weights remain a developing field of research. While recent studies generally confirm previous data showing no significant differences in food appreciation (particularly sweetness) between normal-weight and obese people, some studies suggest differences in certain aspects of appetite. For example, satiety to sweetness may occur more slowly in obese people compared to those of normal weight, possibly stimulating greater intake (Pepino & Mennella, 2012).

Along the same lines, Mexico is the second country in the world with obesity and overweight in adults (Romero-Martínez et al., 2019). It is known that this excessive adiposity can be assessed by different methods, such as anthropometric indices; among the most used to define obesity in the population are the body mass index (BMI), the waist-to-height ratio (WHtR) and the waist-to-hip ratio (WHR) (Shamah Levy et al., 2020).

Considering the above, studies revealing the role of adiposity in primary taste perceptions, as well as

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in dietary patterns, are limited. Therefore, the present work aimed to evaluate whether excess adiposity is correlated with the alteration in the chemoperception of basic tastes (sweet, salty, sour, umami, bitter and astringent) and in the global taste perceived by young adults, in addition to evaluating the differences in men and women.

II. Methodology

A quantitative, descriptive, cross-sectional study was conducted on 22 students (14 women and 8 men) randomly selected and regularly enrolled during the months of February to December 2018. The sample size calculation was done considering a population of 1,500 students of the Biochemical Engineering degree at the National Technological Institute of Mexico, Celaya campus, in an age range of 20 to 30 years, with a confidence level of 95% and a margin of error of 20%. The exclusion criteria were being a smoker, consuming alcoholic beverages, having excessive coffee consumption (more than 3 times a week) and/or presenting any NCDs.

During the study, the ethical principles of dignity, protection of rights and well-being of participants were respected, following the regulations of the General Health Law on Health Research and the Declaration of Helsinki. After authorization from the Ethics and Research Committee, participants were recruited. They signed an informed consent before undergoing the assessments, safeguarding their integrity throughout the data collection process.

a) Training of Participants

Participants received training with basic tastes on 10-point intensity scales (grams of solute/total grams of solution $\times$ 100) (Trachootham et al., 2018). The calibration standards used for taste were sucrose for the sweet taste, caffeine for the bitter taste, citric acid for the sour taste, sodium chloride for the salty taste, monosodium glutamate for the umami taste, and quinine hydrochloride for the astringent sensation. Finally, the sum of each % was expressed as the overall taste as established by Melgar (2004). The training was carried out during 25 sessions per month distributed in 5 sessions per week, each lasting 1 hour and having a daily frequency (except for the weekend).

Subsequently, they were given discriminative triangular tests, in which the subject was presented with triads of solutions in white glasses coded with three-digit numbers chosen at random, and they were asked to indicate the intensity and taste perception detected in the sample (Frijters et al., 1980)

b) Anthropometric Measurement

Anthropometric measurements were performed by a nutrition specialist using a SECA brand fiberglass tape. A 2.20 m SECA brand stadiometer was used for height, and a digital scale (body fat analyzer scale model 5736f, Taylor brand) was used for weight. Three anthropometric indices were used to diagnose excess body fat: BMI (excess body fat > 25 kg/m²) (Sommer et al., 2020), waist-to-height ratio (WHtR) (cut-off point > 0.5) (Macek et al., 2020a), and the waist-hip ratio (WHR), which considered the cut-off points for the Hispanic population (men < 0.90 and women < 0.85) (Lear et al., 2010).

c) Classification of Taste Perception

Traditionally, the level of flavor perception is set on a 10-point scale (Melgar, 2004). However, there is no reference cohort point for classifying the level of flavor perception. In order to be able to make comparisons regarding the elements that make up the mean, a normalization of the taste measurements was carried out using a statistical "standard normalization." This transformation of the scale was carried out by calculating the Z value for a standard normal distribution of a variable, which is obtained by subtracting the observed value from the population mean and dividing the result by the population standard deviation (Bhandari, 2020); using this procedure, they were classified into quartiles (low, poorly, good and excellent) for simple correspondence analysis.

III. Data Analysis and Statistical Analysis

The collected data were expressed as mean ± standard deviation. Data normality was verified using the Shapiro-Wilk test (results not shown). To analyze the subjects' general parameters, a Student's t test for independent samples was applied; and to evaluate the association between tastes and anthropometric indices, a simple correspondence analysis was performed. Finally, the results were corroborated by a Pearson correlation, using IBM SPSS software version 26.

IV. Results

Figure 1 shows the prevalence and distribution of adiposity based on anthropometric indices for the present study. Considering the WHtR, it was found that 57.1% of women had adequate adiposity (AA), values p<0.05 that differed when considering the WHR (78.6%) as well as the BMI (50%) as criteria. In the case of men, 50% had inadequate adiposity (IA) considering both the WHtR and the WHR, values p<0.05 that were higher compared to the BMI criterion (37.5%). This reaffirms that the WHR and the WHtR, despite being new cohort points to determine adiposity and obesity, are not comparable metrics with each other, that is, they have different sensitivity by sex, but both are more sensitive than the BMI.

To verify the presence of body differences between the groups, table 1 presents the descriptive characteristics of the population, subdivided by anthropometric parameters (BMI, WHR, WHtR) and segmented by adiposity cohort point. Of the 22 participants, all were classified as young adults with an age range of 20 to 24 years. It was observed that 64% of

the study population were women, with an average weight of 64 kg and a height of 1.6 m. In the case of men, the average weight was 78 kg and height 1.7 m; Likewise, the average values for waist circumference in women and men exceeded 80 cm and 94 cm, respectively.
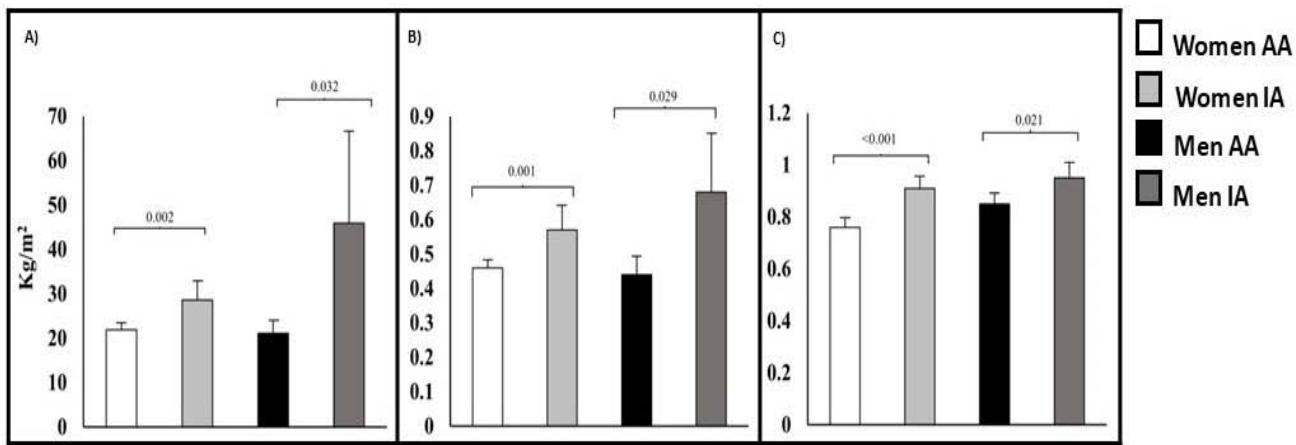

Fig. 1: Classification of Adiposity by Anthropometric Index

The results are expressed as the mean ± standard deviation of the subjects constituting each group. Statistically different values (p<0.05) are indicated using the t-student test. Panel "A" body mass index (BMI), panel "B" waist-to-hip ratio (WHR), panel "C" waist-to-height ratio (WHtR); AA: Adequate adiposity for subjects within the cohort points; IA: Inadequate adiposity for subjects outside the cohort points.

Table 1: Descriptive Characteristics of the Population

Anthropometric Index	n	Age (years)	p	Weight (Kg)	p	Height (m)	p	Waist circumference (cm)	p	Hip circumference (cm)	p
						Women					
BMI AA	7	22.3±1.1	0.484	56.0±5.2	0.008	1.6±0.1	0.966	73.3±2.3	0.006	96.1±4.4	0.008
BMI AI	7	22.9±1.8		73.5±13.8		1.6±0.1		88.8±12.2		106.9±8.0	
WHR AA	11	22.5±1.5	0.904	60.0±7.4	0.006	1.6±0.1	0.410	76.0±5.2	<0.001	99.5±6.2	0.087
WHR AI	3	22.7±1.5		82.0±18.6		1.6±0.0		99.3±10.4		108.8±12.8	
WHtR AA	8	22.8±1.7	0.615	57.6±6.7	0.015	1.6±0.1	0.608	74.1±3.1	0.004	96.9±4.8	0.011
WHtR AI	6	22.3±1.2		74.2±14.9		1.6±0.1		90.3±12.6		107.6±8.5	
						Man					
BMI AA	5	21.6±1.5	0.785	65.1±8.7	<0.001	1.8±0.1	0.716	79.1±8.8	<0.001	92.2±6.7	<0.001
BMI AI	3	21.3±0.6		99.7±3.4		1.5±0.3		111.5±6.1		115.5±3.3	
WHR AA	4	21.3±1.5	0.595	63.8±9.4	0.017	1.8±0.1	0.252	77.1±8.8	0.012	91.0±7.1	0.016
WHR AI	4	21.8±1.0		92.4±14.8		1.6±0.3		105.4±13.2		10.9±9.6	
WHtR AA	4	21.3±1.5	0.595	63.8±9.4	0.017	1.8±0.1	0.252	77.1±8.8	0.012	91.0±7.1	0.016
WHtR AI	4	21.8±1.0		92.4±14.8		1.6±0.3		105.4±13.2		110.9±9.6	

The results are expressed as the mean ± standard deviation of the subjects constituting each group. Statistically different values (p<0.05) are indicated using the t-student test. AA: Adequate adiposity for subjects within the cohort points; AI: Inadequate adiposity for subjects outside the cohort points; BMI: Body mass index; WHtR: Waist-to-height ratio; WHR: Waist-to-hip ratio, and n: number of subjects.

Furthermore, in table 3 was observed that, regardless of sex and as expected, all anthropometric parameters (weight, waist circumference, hip circumference, among others) showed significant differences between subjects with inadequate adiposity (IA) and adequate adiposity (AA).

Figure 2, section A, presents the multiple correspondence analysis for the flavor components and anthropometric indices. For dimension 1 (Table 2), a Cronbach's alpha value of 0.92 was obtained, with an eigenvalue of 9.43 and an inertia of 0.26. The main associated variables in this dimension are salty taste,

sweet taste, astringency and overall perception in relation to sex. Regarding dimension 2, the Cronbach's alpha value was 0.91, with an eigenvalue of 8.85 and an inertia of 0.24. In this dimension, it was observed that all anthropometric indices (WHR, WHtR and BMI) showed a remarkable correspondence with the bitter, sour and umami taste variables.

In section B of the figure 2, it is shown that, when grouping the data by the anthropometric indices according to the level of adiposity, as well as the intensity in the perception of the flavor, the distribution in the quadrants was as follows: in quadrant 1, the variables WHR IA are grouped with the male sex, together with the perception of the astringent, bitter and global flavors in the excellent category, as well as the umami and sweet flavors at a good perception level.

Table 2: Correspondence Model Summary

Dimension	Cronbach's alpha	Variance accounted for	
		Total (self-value)	Inertia
1	0.92	9.44	0.26
2	0.91	8.86	0.25
Total		18.29	0.51
Mean	0.92	9.15	0.25

Table 3: Discriminatory Measures Calculating Row and Column scores

|	Dimension		
Variable	1	2	mean
BMI	0.189	0.216	0.202
Sweet	0.181	0.019	0.100
Salty	0.730	0.129	0.430
Sour	0.003	0.083	0.043
Umami	0.137	0.495	0.316
Bitter	0.026	0.424	0.225
Astringency	0.686	0.444	0.565
Global flavor	0.411	0.070	0.240
WHR	0.028	0.473	0.250
WHtR	0.079	0.338	0.209
Sex	0.041	0.065	0.053
Total	9.286	8.709	8.998

Calculating row and column scores
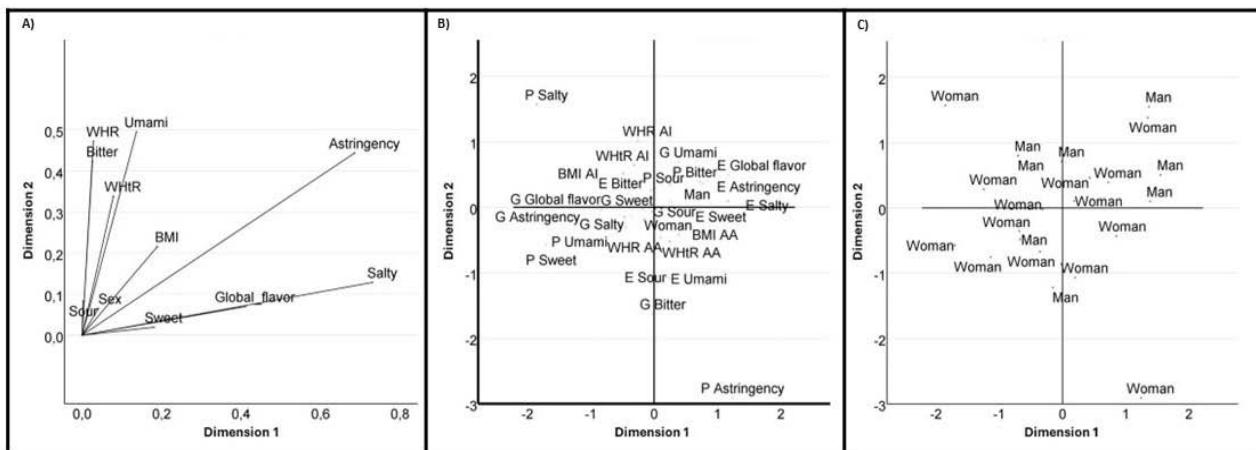
Fig. 2: Correspondence Model between Flavors and Anthropometric Index

Panel A indicates the relationship between primary tastes, gender and anthropometric index. Panel B shows the association between taste perception levels and degree of adiposity. Panel C shows the distribution of subjects associated with each component. P: poor; E: excellent; G: good; AI: Inadequate adiposity for subjects outside the cohort points; AA: Adequate adiposity for subjects within the cohort points; WHR: Waist-to-hip ratio.

In quadrant 2, the WHtR IA and the BMI IA are found, associated with the sweet flavor at a good perception level and the astringent flavor at a regular perception level. Quadrant 3 includes the variables WHR IA with the female sex, and an excellent perception of the acid and umami flavors, as well as a good perception of the bitter flavor.

Finally, in quadrant 4, the variables BMI AA and WHtR AA are grouped, associated with the perception of the salty flavor at an excellent intensity and the astringent flavor at a regular intensity.

Section C of figure 3 shows the distribution of subjects according to sex. In this figure it can be observed that the highest concentration of men is found in quadrant 1, while women predominate in quadrant 3.

Table 4 shows the correlation between anthropometric indices and taste perceptions. In AA women, significant positive correlations were observed between bitter taste and BMI ($p = 0.014$) as well as with WHtR ($p = 0.047$). In IA women, overall taste showed a positive correlation with BMI ($p = 0.028$) and WHtR ($p = 0.043$). In addition, WHtR showed a positive correlation with salty ($p = 0.001$), umami ($p = 0.047$) and astringent ($p = 0.012$) tastes. Sour taste also showed a significant correlation with WHtR ($p = 0.048$).

An interesting trend observed in AA women was the negative correlation with sweet taste; however, these were not significant.

In men, only the IA group showed significant negative correlations between bitter taste and all anthropometric indices (BMI, $p = 0.004$; WHR, $p = 0.028$; WHtR, $p = 0.028$). Furthermore, sweet taste showed a negative correlation with BMI ($p = 0.004$).

This suggests that excess adiposity correlates significantly with astringent taste perception in both men and women. Furthermore, the distribution of adiposity (central obesity) in women significantly influences taste perception.

V. Discussion

In Figure 1, young adult college students were identified and categorized as showing differences in adiposity according to three anthropometric criteria (BMI, WHR, WHtR). Although some of these criteria, in addition to indicating excess adiposity, are markers of cardiovascular risk, the present study focuses on highlighting the relationships between excess adiposity (regardless of degree) and alterations in taste perceptions.

It is now known that people may experience alterations in taste perception, or chronic dysgeusia (a persistent taste sensation), as a result of a true stimulus in the mouth (for example, the taste of an oral infection) or when stimuli reach taste receptors through the bloodstream (for example, the persistent bitterness of some medications) (Bartoshuk & Snyder, 2016).

Considering the above, it is unavoidable to assume that visceral adiposity represents a risk factor that can alter the composition of the blood profile in more than half of the subjects evaluated (assumptions that will be corroborated as the discussion progresses). In addition, other authors have indicated that obesity modifies the blood profile, especially in terms of lipids, monosaccharides and ferritin, which could become a cause of dysgeusia (Custodio et al., 2003).

In the current sample (Table 1), the prevalence of women was higher compared to that of men, which coincides with the gender distribution at the national level, where the proportion of women is higher than that of men (Barquera et al., 2020). Regarding body

distribution, the anthropometric differences inherent to the anatomical characteristics of each sex were confirmed: the gluteal-femoral adipocytes of women are larger than those of men, while the abdominal adipocytes are comparable between both sexes, and the visceral adipocytes in women are smaller (Karastergiou et al., 2012).

The high values in the waist circumference of the participants agree with what is reported for the Mexican population, whose expected theoretical parameters are 87 cm for women and 100 cm for men (Macek et al., 2020b). Furthermore, the results agree that the WHtR is the index with the highest sensitivity for diagnosing obesity in women (Hernández Rodríguez et al., 2018). Although these results are alarming, they unfortunately align with the prevalence of overweight and obesity reported by ENSANUT 2018-2019 (Instituto Nacional de Salud Pública, 2020), where 54% of young adults are overweight or obese, regardless of gender.

Since the present study was not designed to assess possible mechanisms, the reasons for these differences in detection and explanation thresholds for taste preferences are unknown. However, some speculative hypotheses are proposed below regarding the results obtained based on current information in the literature.

For dimension 1, saltiness was found to be correlated with the variable sex, which is consistent with reports in the literature indicating possible gender differences in optimal levels of salt concentration perception. However, data are contradictory as to whether men or women prefer higher levels of salt (Hayes et al., 2010).

Also, as for the sweet taste, it is known that women tend to show a greater preference for this (Van Langeveld et al., 2018). Regarding the lack of association with anthropometric indices, the literature indicates that some studies have found lower trends of preference for sweet and salty foods in obese people compared to thin people or have not reported differences in taste perception between different BMI categories.

Sweet taste showed a low relationship with anthropometric indices, which was partly expected, since the literature is inconclusive on the association between obesity and reduced sweet taste perception. The findings are varied and contradictory, both in comparisons between individuals with obesity and control subjects with normal weight, and in intra-individual studies before and after bariatric surgery (Ribeiro & Oliveira-Maia, 2021).

Based on Figure 2, component 2 suggests that tastes associated with regulating food intake (bitter and sour) have a significant association with anthropometric parameters. One possible explanation for the association of WHR, WHtR and BMI with bitter taste is

that this taste seems designed to warn the body of potential danger, as a "CAUTION, GO SLOW" signal (Klasing & Humphrey, 2009).

In other words, the analysis suggests that bitter taste may function as an indicator of high palatability relative to adiposity. This phenomenon has been termed "taste consequence learning" (Yeomans, 2010), and suggests that although bitter taste is innately unpleasant, this aspect has evolutionary significance as it is present in multiple species. However, innate aversions to bitterness can also be overcome through learning processes involving rewards.

On the other hand, acidity is considered a negative quality of taste (Koone et al., 2014), since its elevated presence increases the probability of food rejection (Chauhan & Hawrysh, 1988). Overall, the statistical result suggests that these two flavors (bitter and acidity), in a physiological way, would be helping to regulate intake to maintain adequate levels of adiposity.

It is also worth mentioning that the umami taste, present in this component and associated with anthropometric indices, has been pointed out by other authors as a target of diet therapy. It has been observed that women with obesity have a lower taste sensitivity to monosodium glutamate and prefer higher concentrations compared to women of normal weight (Pepino et al., 2010).

A possible explanation for the results in Table 3 suggests that obese subjects may present changes in the functionality of chemosensory receptors, suggesting the presence of morphological variations both in the taste bud receptors and along the gastrointestinal tract as part of an adaptive response mechanism that adjusts the body to a sustained positive energy balance in obesity (Steensels & Depoortere, 2018).

In the case of men, it was observed that all groups with inadequate adiposity (IA) presented a negative correlation with bitter taste. This can be explained considering that obese subjects usually have higher levels of ferritin compared to people with normal weight, because ferritin is not only a marker of iron stores in the body, but also an acute phase reactant, which means that its levels can increase in response to inflammation (Mabry et al., 2010).

Furthermore, obesity, especially when there is accumulation of visceral adipose tissue, is associated with a chronic low-grade inflammatory state. This systemic inflammation stimulates the production of ferritin, which explains the elevated levels of this biomarker in people with obesity. Excess adipose tissue also contributes to insulin resistance and an increased release of inflammatory cytokines, which is related to increased ferritin. However, these elevated ferritin levels do not always reflect a greater amount of iron available to the body, but may be more closely linked to inflammation (Mraz & Haluzik, 2014), Therefore, the

results suggest that men with IA have a reduced ability to perceive bitter taste, requiring higher concentrations to detect it.

In the case of women, a positive relationship was observed between bitter taste and adiposity. That is, at adequate (healthy) adiposity levels, women have greater sensitivity to detect this taste, unlike what was observed in men. This can be explained because women tend to have lower levels of ferritin compared to men, due to physiological factors such as menstruation and lower muscle mass (Milman, 2011). However, it is known that women with IA have higher levels of ferritin than women with adequate adiposity (AA), mainly due to their high degree of inflammation and insulin resistance (McKenna et al., 1999; Mraz & Haluzik, 2014).

Regarding the finding that women with IA show a positive correlation between BMI and umami taste perception, this is in line with what has been reported in the literature. Obese women have been observed to have a significantly higher MSG detection threshold, preferring higher concentrations than normal weight women (Pepino et al., 2010).

Regarding the correlation between acidic taste and WHtR in obese women, it has been seen that women have a greater perception of this taste compared to men (Haase et al., 2011). However, this differs from what was reported by other authors, who found that adults with a BMI greater than 28 had a poorer ability to detect sour taste compared to those with a lower BMI (Simchen et al., 2006). Furthermore, an improvement in taste acuity for bitter and sour tastes, along with a reduction in salty and sweet detection thresholds, has been described in the literature after gastric bypass surgery in morbidly obese subjects (Scruggs et al., 1994).

Concerning sweet taste and its correlation with BMI in subjects with IA, one study suggests that people with obesity rate higher concentrations of sweet taste as more pleasant (Rodin et al., 1976). Furthermore, it has been seen that the greater perception of sweet taste could be due to a greater central or peripheral sensitivity to sweet stimuli or to learned associations with feedback after the ingestion of sugars in people with obesity, who show greater activity in the regions of the somatosensory cortex responsible for processing sensations in the mouth, lips and tongue for this taste (Wang et al., 2002).

Furthermore, the literature suggests that in murine models with obesity the perception of sweet taste is influenced by peripheral factors, such as leptin and glucagon-like peptide 1 (GLP-1), suggesting that the signals produced by adipocytes may be fundamental to generate a reward response to monosaccharides (Liu et al., 2016).

Previous studies suggest the chemoreception pathway increases with the high concentrations of fatty acids triggering the receptor or ion channel, which activates a complex signaling cascade including increased cytoplasmic calcium level leading to the depolarization of the receptor cell. As this reaction also involves the production of IP3, the transduction system resembles that of the sweet, bitter and umami (Liu et al., 2016); the above could explain another mechanism by which the condition of obesity that increases the de novo lipogenic pathways would have an altered taste perception.

Finally, a positive correlation was observed between astringency, global sensory perception and WHR in women with IA. This finding is relevant, since the level of intensity with which astringency is perceived varies between individuals and can influence the acceptance of foods rich in polyphenols, mainly foods of plant origin, so these authors suggest that this fact could affect eating habits, promoting a lower consumption of foods rich in polyphenols (Louro et al., 2021); in addition to the above, it was observed that the taste function between sexes showed greater sensitivity in women compared to men, which is consistent with some previous studies (Michon et al., 2009; Yoshinaka et al., 2016; Ervina et al., 2020).

VI. Limitations

A number of limitations are inherent to the current study and are addressed below. First, since the study is cross-sectional in nature, future longitudinal studies assessing perceptual behavior in each taste according to each anthropometric index are needed to fully elucidate the reported relationships. Furthermore, although diet and physical activity are known confounders of the relationship between anthropometry and chemoperception, due to lack of relevant data, these variables were not accounted for in the analysis. Nonetheless, notable strengths of the current study included rigorous control in participant selection, training, and testing, as well as rigorous and comprehensive statistical analyses.

VII. Conclusion

In conclusion, the results of this study support the hypothesis that obese and non-obese individuals differ in their perception of taste. The results also suggest that in the case of women, central or visceral adiposity has a prominent impact on the perception of all basic tastes, and in the case of men, excess adiposity, regardless of type, affects the perception of bitter taste.

Considering the literature, changes in taste sensitivity are influenced by endocrine and paracrine processes, which directly condition the exposure of taste sensors to an important range of metabolites that in turn can potentially cause dysgeusia.

It should be noted that the taste system does not only depend on external stimulation through food,

but is much more susceptible to health status and metabolic risk factors. However, to date, these modulations are only marginally understood. Therefore, further studies on taste sensitivity and hormonal status in obese subjects are required. Over time, this could help develop new obesity prevention and treatment strategies that improve nutritional education considering taste alterations.

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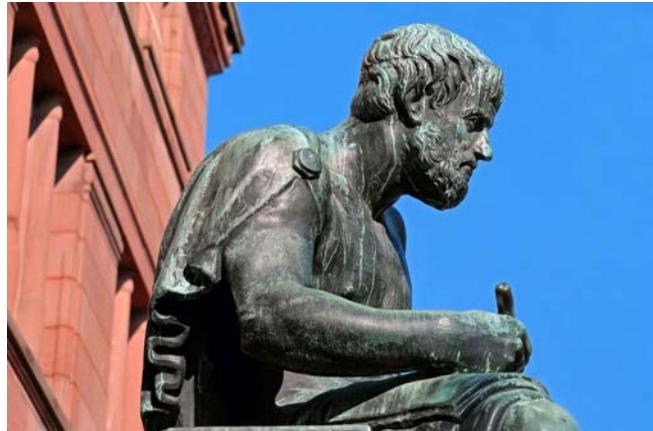
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Tips for writing a good quality Medical Research Paper

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of medical research then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.
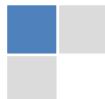
20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

o   Explain the value (significance) of the study.
o   Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
o   Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
o   Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

o   Report the method and not the particulars of each process that engaged the same methodology.
o   Describe the method entirely.
o   To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
o   Simplify—detail how procedures were completed, not how they were performed on a particular day.
o   If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

o   Resources and methods are not a set of information.
o   Skip all descriptive information and surroundings—save it for the argument.
o   Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

o   Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
o   In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
o   Present a background, such as by describing the question that was addressed by creation of an exacting study.
o   Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
o   Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

o   Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
o   Do not include raw data or intermediate calculations in a research manuscript.
o   Do not present similar data more than once.
o   A manuscript should complement any figures or tables, not duplicate information.
o   Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- o You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- o Give details of all of your remarks as much as possible, focusing on mechanisms.
- o Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- o One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- o Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

Written material: You may discuss this with your guides and key sources. Do not copy anyone else's paper, even if this is only imitation, otherwise it will be rejected on the grounds of plagiarism, which is illegal. Various methods to avoid plagiarism are strictly applied by us to every paper, and, if found guilty, you may be blacklisted, which could affect your career adversely. To guard yourself and others from possible illegal use, please do not permit anyone to use or even read your paper and file.

CRITERION FOR GRADING A RESEARCH PAPER (COMPILATION)
BY GLOBAL JOURNALS

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals.

Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

INDEX

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9   2

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