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Masculinidad y su relación con hábitos alimentarios y actividad física en la frontera Norte de México
Masculinity and its relationship with eating behaviour and physical activity in the northern border of Mexico

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Autores del reporte técnico:

Dra. Graciela Cristina Avitia
Dra. Yolanda Loya Méndez
Dra. Verónica Portillo Reyes
Dr. Alejandro Domínguez Rodríguez

Masculinity and its relationship with eating behavior and physical activity in the northern border of Mexico

Resumen

La construcción del género masculino obedece a normas que la mayoría de los hombres deben cumplir, algunas de éstas se asocian a conductas poco saludables. A pesar de que México padece tasas altas de sobrepeso y obesidad no se ha explorado la masculinidad como una variable importante en esta problemática. Por lo que el propósito de esta investigación analizar la relación que puede existir entre la masculinidad, conductas saludables como la alimentación y actividad física de Ciudad Juárez y Tijuana. La muestra comprende a 224 participantes, de los cuales 121 corresponden a Tijuana y 103 a Ciudad Juárez; el promedio de edad fue de 22.17 años. Los instrumentos utilizados fueron el cuestionario mundial sobre actividad física, el cuestionario de comportamiento alimentario y la escala de ideología y roles masculinos. Los resultados muestran que los hábitos alimenticios saludables están más relacionados a tener un rol de sexualidad dominante. La actividad física está relacionada con roles de masculinidad tales como: sexualidad dominante [r = .15, p <.05] y proveedor económico [r = .23, p <.01]. Adicionalmente, se encontró que los residentes de Ciudad Juárez presentaron un mayor rol de género masculino como proveedores económicos.

Abstract:

The construction of the masculine gender obeys norms that most men must satisfy with, some of these are associated with unhealthy behaviors. Even though Mexico suffers from high rates of overweight and obesity, masculinity has not been explored as an important variable in this problem. Therefore, the purpose of this research is to analyze the relationship that can exist between masculinity and healthy behaviors such as diet and physical activity in the border cities of Ciudad Juárez and Tijuana. The sample is 224 participants: 121 from Tijuana and 103 from Ciudad Juárez; the age mean corresponds to 22.17 years old. The instruments used are the global questionnaire on physical activity,

the eating behavior questionnaire and the scale of masculine ideology and roles. The results shown healthy eating behavior is more related to having a dominant sexuality role. Physical activity is related to masculinity roles such as: [r = .15, p <.05] dominant sexuality and [r = .23, p <.01] economic provider. In addition, it was found that the residents of Ciudad Juárez presented more the role of economic providers and that this is related to obesity.

Key Words: Masculinity, physical activity, eating behaviors

Potential users

Students
Researchers

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1. INTRODUCTION

The approach to obesity from the perspective of culture and the social context, proposes that being overweight and/or obese is not only the fault of the individual who presents it, but that eating, health and physical activity behaviors are determined by culture, education and values that develop from a collective construction, in this case the construction of the masculine gender or, in other words, the macho culture to which we have been exposed in Mexico. For example, to Giddens (1997), obesity represents a reflection of social and gender inequality where choosing healthy behaviors cannot be a choice for people with a low socioeconomic level. But it does reflect the differences in health perception between men and women, based on the differentiated construction between genders.

The analysis of this situation indicates that in Ciudad Juárez there is a high proportion of the population with obesity or at risk of suffering it. According to researchers from the Mexican Federation of Private Associations (FEMAP, by its acronyms in Spanish) and the Autonomous University of Ciudad Juárez (UACJ), this city belongs to one of the first places with cancers, diabetes, and obesity, with chances of experiencing other medical and psychological consequences. Numbers obtained by the

Health Jurisdiction indicate that of 1927 deaths from chronic diseases, 806 were from diabetes, 764 from ischemic heart disease, 217 from hypertension and 256 from heart disease, all these associated with obesity (Gamboa, 2013).

Overweight and obesity in this region are highly prevalent, as seven out of every ten adults from Ciudad Juárez have one of these conditions, four out of ten adolescents and one out of ten children. These statistics show that the city needs to put in place policies and strategies to prevent these states, since, according to the president of FEMAP, the city is becoming ill. In addition to the problem of obesity and overweight, the consequences of associated diseases are of interest (Gamboa, 2013).

This study will be carried out at similar colleges such as Tijuana and Ciudad Juárez, both on the border with the United States, and both with a high number of US companies. This being a predisposing factor for obesity in Mexico, called nutritional transition, which is a change in daily intake due to environmental modifications, such as demographic transition, urbanization and economic development (Malik, Willet and Hu, 2013; Misra, & Khurana, 2008; Swinburn, et al., 2011). The economic development of the north of the country, industrialization and the greater supply and availability of food, as well as the incorporation of women in the labor field, have led to a greater consumption of products rich in cholesterol, saturated fats, sugars and sodium. This clearly shows the nutritional transition associated with obesity (Fausto, Valdez, Alderete and López, 2006; May, Andrade, Kavanagh, and Hetherington, 2012). Along with gender differences in healthy behaviors.

Based on the foregoing, it is pertinent to explore the relationship that may exist between a high level of conformity with male gender norms, eating habits and physical activity. Given that, if a significant correlation is found between these variables, masculinity could be an aspect to considered in future interventions with the aim of reducing the prevalence of overweight or obesity in the Mexican population.

2. APPROACH

Northern Mexico is located on the US border. The border area between the US and Mexico influences the lives of people in both countries, in terms of social, economic

culture, and includes the exchange of trade, tourism and family ties of sister cities. (Pan American Health Organization, 2012, as cited by Lakhani, 2014). The two most populous cities in Mexico on the US border are Tijuana and Juarez. They are economically viable locations to install manufacturing centers such as maquiladoras due to their border location, where workers produce auto parts, medical and electronic devices, for a salary of less than 11 dollars per day (Lakhani, 2014). Other characteristics of these border cities (along with another such as Nogales), is that the high levels of population and urban growth since the mid-20th century due to economic activity with the US (Acosta, et al., 2015). Therefore, the characteristics that both cities share (although the considerable geographical distance of 1,198.8 kilometers between them), makes them very similar to each other.

In 2012, the information on the prevalence of overweight and obesity divided in regions of Mexico was: the north with a 10% less prevalence of overweight compared to the center (17.1%), the capital (17.1%) and the south (14.9%), however, the population with obesity was higher in the northern cities (North: 37.2%, Centre: 30.3%, capital: 33.9% and South: 31.6%) (The National Survey of Health and Nutrition [ENSANUT], by its acronyms Spanish, 2012). One of the main causes of obesity in Mexico is unhealthy nutrition (Denova-Gutiérrez, et al., 2011), specifically the high consumption of fast foods, soda, sugar, and refined breads (Flores, et al., 2010). Approximately 75% of deaths in Mexico are due to non-communicable diseases, obesity, and an unhealthy diet, and approximately 170,000 persons die each year. Among the main causes of obesity is the relationship between an energy intakes that exceeds energy expenditure as the main factor of weight gain (Romieu, et al. 2017). Simply put, from the National Health Service of England (NHS), obesity is usually caused by eating too much and moving too little (NHS, 2019).

Although men and women are very similar in the global prevalence of overweight and obesity, women are slightly higher than men in those figures (WHO, 2018). However, several social rules have been stricter for women about their diet than men. And women have been identified as eating healthier than men (Rothgerber, 2012). The reasons for the different eating behaviors and attitudes toward nutrition can be found in psychological and social-cultural factors (Kiefer, Rathmanner & Kunze, 2005).

Additionally, there is evidence that women consider their food choices to be personally important and relevant, and among food choice factors, the mean score for food label information in supermarkets is higher for women than for men (3.75 vs. 3.09, $p<0.001$) (Levi, Chan & Pence, 2006). However, in terms of Physical Activity (PA) it has been widely observed that men are more involved in PA practices than women (Renato-Azevedo, et al. 2007)

The reason why these differences are observed between women and men are still under study. One of the reasons that can be connected to this lack of care of healthy eating behaviors in men may be related to the concept of masculinity. The construction of masculine gender obeys to norms that must be fulfill by the majority of the men in a certain culture, who are in a constant search to achieve the hegemonic masculinity model (Connell, 2003). Within the rules of masculinity, some can be found that are associated with the performance of behaviors that put men's health at risk (Courtenay, 2000; & Keijzer, 2003) and the lack of self-care behaviors (Muñoz, 2015).

In this sense, in Mexico a higher mortality rate and a lower life expectancy were observed for men than for women (INEGI, 2008), as well as suffering from other diseases that are related to risky behaviors and few healthy behaviors, which is possibly associated with high levels of compliance with male gender norms (Mahalik et al., 2003). In addition, we can observe that there are living conditions in the urbanized sectors that are determining cultural patterns that configure lifestyles, which, when linked to gender constructions, can differentiate between men and women in health indicators (Caro, 2001).

For example, one of the reasons that young men perform more PA than women may be related to increased muscle strength, and these same men stated that doing PA for taking care of the health was a more feminine trait (Verdonk, Seesing & de Rijk 2010). Besides, the practice of sports continues to be a masculine-dominated activity based on being competitive, aggressive and having elements of traditional understanding of men´s sport (Wellard, 2016). This tendency to support aggression in men´s sports comes from a young age, and is sometimes even tolerated and taught by elementary school teachers (Hickey, 2008).

Another indicator of the relationship between masculinity and eating behaviors is the high consumption of meat, particularly red meat, over the consumption of fruits and vegetables (Sobal, 2005). Eating meat is an indicator of being perceived as male and avoiding its consumption allows to being seen as female. This meat-masculinity link can be related to culture (Sumpter, 2015). A study carried out by Schösler, et al. (2015), in which they compared the second generation of Dutch Chinese, Dutch Turkish and native Dutch, having as a result that the Turkish group showed the greatest gender differences and the strongest meat-masculinity link, and the native Dutch, smallest gender differences and the weakest meat-masculinity link. This relationship between masculinity and unhealthy eating is so strong that few men with prostate cancer want to change their diet after diagnosis, even when it means having a longer life (Mróz, et al. 2011).

As can be shown, the study of the relationship between masculinity and unhealthy behaviors related to eating and PA has been widely studied worldwide during the last decades, however in Mexico, one of the countries with the highest prevalence of overweight and obesity, this type of research has not been carried out. Therefore, the objective of this study is to analyze the relationship that could exist between masculinity, unhealthy eating behaviors, and the performance of PA in men residing in the border cities of Mexico and United States such as Tijuana and Juárez.

3. METODOLOGY

Design

Due to the lack of evidence on the relationship between masculinity, eating habits and physical activity in the Mexican population, a non-experimental study will be carried out with a cross-exploratory design.

Participants

A non-probabilistic sample was taken. In the case of the city of Tijuana, the sample was 121 individuals, while in Ciudad Juárez there were 103 participants, giving a total of 224 subjects. The study was approved by the bioethics committee of the Faculty of the Medicine and Psychology University of Baja California, (Approval ID: D176). It was carried out with men between 18 to 40 years old that live in the northern cities of

Mexico of Tijuana or Juarez. Non exclusion criteria were established apart from not signing the informed consent.

Procedure

In Tijuana, the subjects went to the Universidad Autónoma de Baja California in the Psychology Laboratory of the Faculty of Medicine and Psychology. In Juarez, the subjects went to the Universidad Autónoma de Ciudad Juárez, in the Nutrition Clinic of the Institute of Biomedical Sciences. Informed consent was given to the participants, who, after signing it, completed the surveys. Instruments filling took approximately 35 minutes per participant. The evaluation of the participants was carried out by the researchers of this project together with trained undergraduate students.

Main Outcome Measures

Global Questionnaire on Physical Activity, G-PAQ

This questionnaire was developed by the World Health Organization (WHO), with the aim of monitoring physical activity in developing fields: Activity at work, activity meanwhile move to work or house, activity in the free time.

Eating behavior questionnaire Márquez-Sandoval, et al. (2014)

This questionnaire assesses the dietary behavior of Mexican university students. It is made up of 31 items, and most of the questions can be in answered with multiple-choice answers, including questions about selection, preparation, and times of consumption, food preference, beliefs, and barriers to change. The instrument had content validity by experts with a score of 42.5 out of 45 possible points and the Cronbach´s alpha 0.98 for the internal consistency of the items.

Scale of Ideology and Male gender roles. Tovar-Hernández and Rocha 2012.

The first section assesses the hegemonic masculine ideology, through 25 items, with five Likert type response options, ranging from one that means totally disagree to six that means totally agree. The second section evaluates the behaviors of men role, through 25 vignettes that have four response options, which were answered based on what men would do in each situation, assigning number one to what they would do first, two to second option, well up to four that would be what they would do last. The third

section consists of 25 sentences that aim to assess the level of discomfort that would result from non-compliance with male roles, with six Likert-type response options ranging from one that means totally disagreement to six that means totally agree. The fourth section is sociodemographic data. The internal consistency index of the total scale was .935.

Statistical Analysis

The questionnaires were coded and emptied into databases to be analyzed by the statistical program IMB SPSS v.20. The statistical tests were Pearson correlations to explore the relationship between the variables of interest. In addition, independent samples of the Student's t test will be carried out, to find out if there are differences in these variables between both cities in order to explore this topic a little more.

4. RESULTS

Pearson's Correlations

Eating behavior

Statistically significant and low correlations were observed in the two subscales of Male Ideology: dominant sexuality and superiority [r = -.27, $p < .001$] and [r = -.23, $p \leq .001$] respectively. As for the male roles factor, the subscale of dominant sexuality also correlates significantly with healthy eating behavior [r = -.16, $p < .05$]. The results may suggest that the lower the ideology of dominance and superiority, and dominant sexuality role, the lower the healthy eating behaviors of men (as can be seen in table 1).

Physical Activity

Regarding sedentary lifestyle, statistically significant, low, and negative correlations were found in the dominant sexual ideology [r = -.15, $p < .05$] and in the role of economic provider [r = -.15, $p < .05$]. In addition, the results showed small and positive correlations in the total physical activity performed by the participants with the male roles factor in their two subscales: [r = .15, $p < .05$] in dominant sexuality and [r = .23, *p*

<.01] in economic provider (table 1). That might suggest that men who have greater male roles of dominant sexuality and economic provider, could perform more physical activity.

Table 1.

Pearson's correlation between ideology and male gender roles, and Physical Activity.

	Eating Behaviour	Physical activity	Sedentary Lifestyle
Male ideology			
Dominant sexuality	-.266**	.114	-.148*
Superiority	-.233**	.145	-.110
Male roles			
Dominant sexuality	-.157*	.149*	-.042
Economic provider	-.096	.227**	-.151*

Note: EB= Eating Behaviour; PA= Physical activity; * p < .05; ** p < .01

Student's t test for independent samples

The results indicate that statistically small and significant differences were encountered between the participants of Juarez and Tijuana in the economic provider subscale in the male roles factor [t (193) = -2.41, *p <.05*, d = .35]; in the percentage of body fat [t (193.95) = -2.80, *p <.01*, d = .39]; and in sedentary lifestyle [t (194) = 2.36, *p <.05*, d = .34]. According to the means obtained, these results may suggest that men residing in Tijuana are more sedentary and their roles as an economic provider are lower compared to men residing in Ciudad Juárez, as can be seen in table 2.

Table 2.

Student´s t tests between cities and ideology and male gender roles

	Tijuana	Juarez	t	*p*	Cohen´s
	M (SD)	M SD			d
Male ideology:				.	
Dominant sexuality	8.14(4.76)	8.65(4.56)	-.755	.451	____

Superiority	10.61(4.22)	11.35(4.06)	-1.235	.218	____
Male roles:					
Dominant sexuality	13.33(4.93)	14.13(6.25)	-.982	.328	____
Economic provider	7.91(3.08)	8.95(2.87)	-2.410	.017	.34
Eating behavior	21.34(4.78)	21.53(4.85)	-.247	.785	___
Physical Activity	135.56(179.03)	182.02(271.78)	-1.448	.149	___
Sedentary lifestyle	448.82(215.15)	376.89(204.25)	2.358	.019	.35

Note: Of the statistically significant variables, the percentage of body fat did not show homogeneity in the variances according to the Levene test, so these data should be interpreted carefully.

5. CONCLUSIONS

The objective of this study was to analyze the relationship that may exist between male norms, obesity, and healthy behaviors such as diet and physical activity. The findings provide evidence that healthy eating behavior is more related to the masculine ideology of dominant sexuality and superiority and to having a dominant sexuality role. While PA is more related to masculinity roles than to the ideology of masculinity norms. In addition, it was found that the residents of Juárez presented more the role of economic providers than residents of Tijuana.

This association is confirmed by the finding of a higher percentage of body fat in the population studied in Juárez. Also, the results suggest that men residing in Tijuana are more sedentary. This may be associated with the role that men play in society. The gender role is established through the adoption of norms and behaviors that society establishes as characteristic of each sex. The assumed role can influence attitudes towards health, nutrition, and body weight. Studies in different populations show that when men follow the male role of provider, it requires them to assume the role of strong without fissures and prevents them from considering personal aspects such as health, which can lead them to practice health behaviors to a lesser extent and increase risk of obesity.

Although this sample was composed with a similar number of participants in both cities (121 in Tijuana and 103 in Juarez), and both cities share similar characteristics, the results differ between the participants. Among the reasons it could be influenced by the

amount of habitants in each city, according to National Institute of Statistic and Geography (INEGI, by its acronym in Spanish), with data of 2015, there were more habitants in Tijuana (1, 641,570) than in Juarez (1,391,180), however there are other differences between the cities that could explain this results is a higher fluent movement of people stablishing in Tijuana due to its economical growing despite the increase on the rate of violent crimes (Linaldi, 2019), also, one of the main differences between Juarez and Tijuana, is that due to the geographical location of the second is considered a touristic city and this also influences in its economic activity (Valle, 2019). Lastly, although both cities are in the border with United States (Tijuana – San Diego, Juarez-El Paso), Tijuana is officially the busiest border crossing in the world (Watson, 2015) with a typical day crossing over 50,000 northbound vehicles and 25,000 pedestrians just trough the San Ysidro port of entry (Epstein, 2017). This clearly influences in the economic activity of the Tijuana and therefore it is suspected that the role gender.

On the other hand, it was observed that a greater role of economic provider is associated with greater physical activity, probably attributed to work activity, which does not imply the practice of sport. Although this could be favorable for health, it is not reflected in the percentage of fat in the population of Juarez, which was higher in economic providers. Perhaps this is associated with less health care and eating.

Limitations

Some limitations of the current study should be pointed out. First, it can be observed that the study sample was focused on the cities and in the border with U.S. and it has been mentioned the influence that both countries influenced between each other. However, the sample composed was only in two cities of México, future studies should focus on the analysis of the instruments applied in this study to border cities in both countries. Another limitation is that psychometrics were applied to participants, and therefore it was necessary that the participants responded such instruments according to their perception and memory, however it could be more accurate to measure objectively some of the behaviors analyzed in this study (e.g. Physical Activity), through objective measures such as pedometers. Also, more instruments could be applied to measure another aspect that will provide more clarity. These are tasks that should be considered and analyze these aspects in the future.

Strengths

This is the first study that according to the literature review performed by the researchers, that analyze the influence on masculinity regarding the influence of physical activity, eating behaviors in a country such as Mexico, one of the countries with higher trends of population with overweight and obesity (Organización, para la cooperación y el Desarrollo Económicos, [OECD, by its acronyms in Spanish], 2017). Also this study is very relevant due to Hegemonic Masculinity is considered a public health problem due to it promotes aggressive behavior, violence towards men and women (Ortíz-Ortega & Rivas-Zivy, 2006), and Mexico is considered one of the countries with higher hegemonic masculinity worldwide (Ayala, et al., 2020).

Conclusion

In general, the results obtained in this study confirmed that masculinity plays an important role in the nutrition and physical activity performance of men in both cities. However, this influence was observed to interact differently in both cities. These results can be used to develop appropriate interventions focused on the specific needs of the population of each city that perhaps will be have a stronger influence on change of habits compared to previous interventions.

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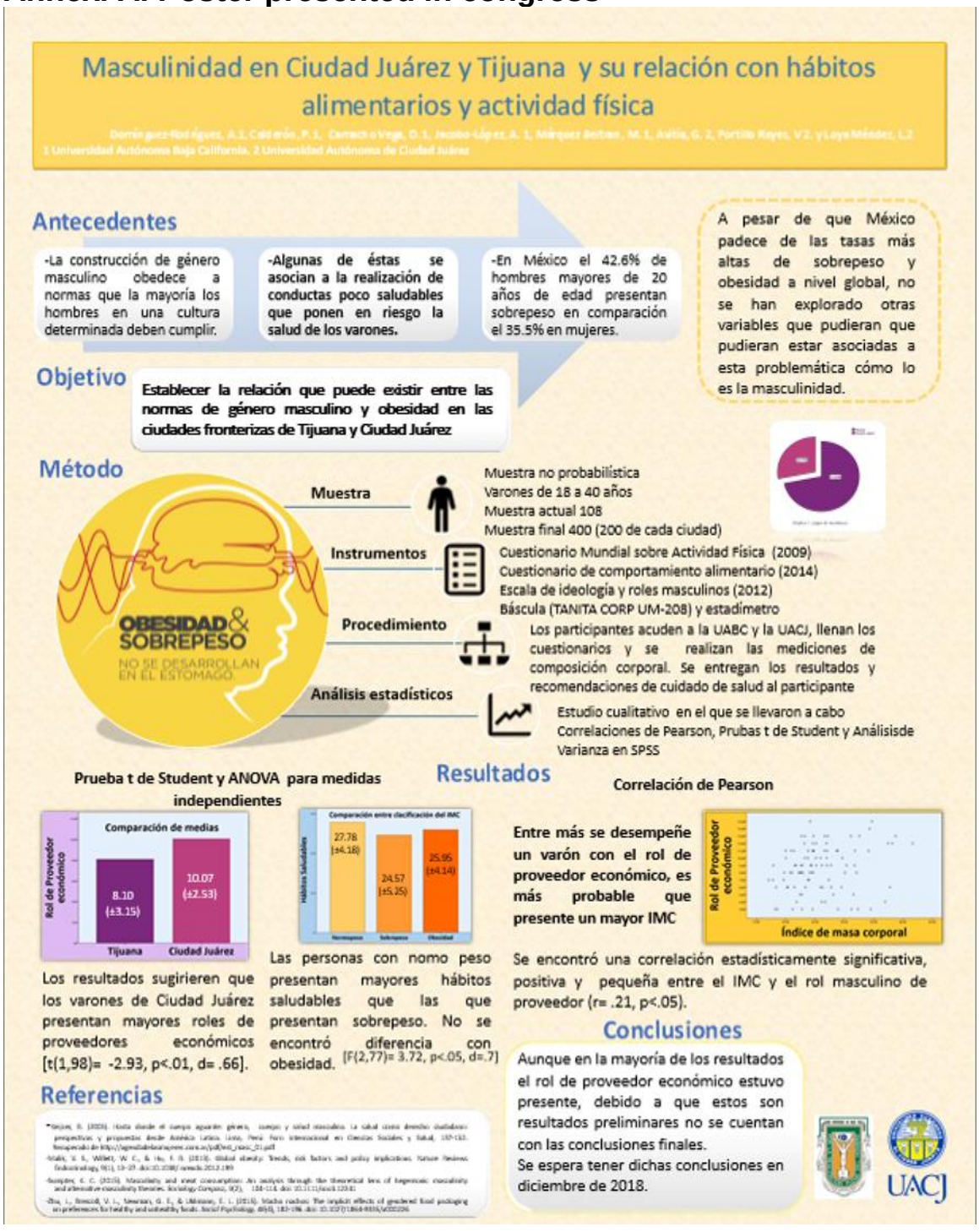
ANNEX

Annex. A. Poster presented in congress



Productos generados

Memoria in extenso (Masculinidad en Ciudad Juárez y Tijuana y su relación con hábitos alimentarios y actividad física)
Ponencia de cartel en congreso (Anexo A)

**Nota: El reporte técnico tendrá una extensión mínima de 5 cuartillas y máxima de 30, a espacio y medio.

CONSIDERACIONES:

- Los reportes deben estar escritos en español o en inglés.
- Se debe entregar en formato Word acorde a este formato.
- El texto debe ser escrito en hoja tamaño carta a espacio y medio, y los márgenes deberán encontrase al menos a una pulgada (2.54 cm). La totalidad del texto debe escribirse en minúsculas, utilizando las mayúsculas sólo al principio de las oraciones y para los títulos de capítulos.
- Se recomienda usar el tipo de letra Arial tamaño 10, o Times new Roman tamaño 12.
- Todas las páginas deben estar numeradas en secuencia comenzando desde la portada.
- La extensión total del texto es de un mínimo de 5 cuartillas y un máximo de 30 cuartillas, con un interlineado de espacio y medio.
- Archivos de Excel de tablas y gráficas deben ser adjuntados al reporte enviado electrónicamente.
- Las figuras, fotografías y tablas, serán insertadas en el cuerpo del texto y numeradas en forma consecutiva comenzando con 1 y de manera independiente de las tablas. El número y descripción de la figura, tabla, etc., deberá colocarse antes de la misma.
- Se recomienda evitar el uso de sombras y líneas punteadas que no permitan una legibilidad clara de imágenes.
- Las fórmulas y ecuaciones deben hacerse con un editor de ecuaciones como el que viene en Word. Estarán centradas y separadas del texto. La numeración será consecutiva comenzando con 1. El número de la fórmula deberá encerrarse entre paréntesis y colocarse a la derecha de la fórmula lo más cercano posible al margen derecho.
- Las referencias bibliográficas en el texto deben ser en cualquier estilo reconocido como APA, MLA, ISO, etc.
- Los anexos se colocarán al final del documento después de la bibliografía, utilizando caracteres alfabéticos para distinguirlos: Anexo A, Anexo B, etc. La información contenida en los anexos es importante pero no indispensable para la comprensión del trabajo. Se recomienda colocar en los anexos mapas, fotografías, tablas, desarrollos matemáticos, diagramas, etc.