



Original article

Level of adaptation in elderly from two locations in the State of Hidalgo, Mexico

Nivel de adaptación en adultos mayores de dos localidades del estado de Hidalgo, México

Luis Ángel Granados León¹  Ximena Guadalupe López Vargas¹  Benjamín López Nolasco¹ 
Ariana Maya Sánchez¹ 

Resumen

Introducción: el número de adultos mayores ha aumentado progresivamente en los últimos años. El proceso de envejecimiento conlleva una serie de cambios que requieren la capacidad de adaptación de la persona mayor; este nivel de adaptación permite actuar al profesional de enfermería en dicho sector de la población.

Objetivo: medir el nivel de adaptación de adultos mayores en dos localidades del estado de Hidalgo.

Material y métodos: investigación cuantitativa, transversal, retrospectiva y con un nivel de alcance descriptivo. Se aplicó el instrumento Nivel de Adaptación del Adulto Mayor Activo, con una confiabilidad de 0.87 en modo fisiológico, 0.88 en modo de autoconcepto, 0.97 en modo de interdependencia y 0.96 en modo desempeño de rol, según Kuder Richardson (KR-20), en una muestra de 156 adultos mayores, obtenida mediante la fórmula de proporciones para poblaciones finitas. La aplicación se realizó en unidades de salud de las localidades de Tepatepec y Bomintzha en el periodo mayo-junio de 2022. Se obtuvieron cartas de consentimiento informado por parte de los participantes. El análisis de los datos se realizó mediante el paquete estadístico SPSS versión 25, obteniendo frecuencias y porcentajes para cada modo adaptativo del instrumento y variables sociodemográficas.

Resultados: se presenta un nivel de adaptación integrado en el modo fisiológico en 80.1% de la población; en el modo de interdependencia en 91.7%, y en el modo función del rol en 93.5%; el modo de autoconcepto presenta un nivel de adaptación compensatorio en 93.5% de la población.

Conclusiones: los adultos mayores presentan un nivel de adaptación integrado en los modos fisiológico, interdependencia y función del rol.

Palabras clave: adaptación, adulto mayor, envejecimiento

Citation: Granados León LA, López Vargas XG, López Nolasco B, Maya Sánchez A. Nivel de adaptación en adultos mayores de dos localidades del Estado de Hidalgo, México. Rev Enferm Neurol. 2023;22(2): pp. 140-149.

Correspondence: Benjamín López Nolasco
Email: benjamin_lopez8496@uaeh.edu.mx

Received: April 19, 2023
Accepted: May 25, 2023

¹ Universidad Autónoma del Estado de Hidalgo, Escuela Superior de Tlahuelilpan



Abstract

Introduction: The number of older adults has increased progressively in recent years. The aging process entails a series of changes that require the adaptive capacity of the older person; this level of adaptation allows the nursing professional to act in this sector of the population.

Objective: To measure the level of adaptation of older adults in two localities in the state of Hidalgo.

Material and methods: quantitative, cross-sectional, retrospective, and descriptive research. The Adaptation Level of the Active Older Adult instrument was applied, with a reliability of 0.87 in physiological mode, 0.88 in self-concept mode, 0.97 in interdependence mode, and 0.96 in role performance mode, according to Kuder Richardson (KR-20), in a sample of 156 older adults, obtained through the formula of proportions for finite populations. The application was carried out in health units in the localities of Tepatepec and Bomintzha in May-June 2022. Informed consent letters were obtained from the participants. Data analysis was performed using the SPSS version 25 statistical package, obtaining frequencies and percentages for each adaptive mode of the instrument and sociodemographic variables.

Results: A level of integrated adaptation is presented in the physiological mode in 80.1% of the population; in the interdependence mode in 91.7%, and in the role function mode in 93.5%; the self-concept mode presents a compensatory adaptation level in 93.5% of the population.

Conclusions: Older adults present an integrated level of adaptation in the physiological, interdependence, and role function modes.

Keywords: adaptation, older adult, aging

Introduction

An older adult is a person who is over 60 years of age.¹ Currently, demographic changes related to this population have occurred worldwide, since the number of older adults has surpassed the population under 5 years of age, as a result of life expectancy exceeding 60 years in most of the world.^{1,2} In 2020, older adults represented 12% of the total Mexican population, that is, for every 100 individuals under 15 years of age, there were 48 older adults.^{3,4} At this stage of life,

various biological, psychological, and social changes arise due to the aging process. This process occurs differently in each person^{2,5} and predisposes them to adaptation.

Adaptation is a concept commonly used in nursing practice. According to Sister Callista Roy, it is a process in which the individual—who can feel and think and is perceived as a single individual or in a group—chooses to integrate as a human being into the environment and its factors.⁶ Roy defines the person as a system that works as a whole, in which each element, both inputs and outputs,

control and feedback processes, are related.⁶ According to this model, the person is assessed based on four adaptive modes: the physiological mode, which includes those physical and physiological processes that allow the individual to adapt and is composed of five basic needs: oxygenation, nutrition, elimination, activity and rest and protection; the self-concept-group identity mode, which constitutes a psychological mode that provides insight into the state of self-esteem and how the individual perceives him/herself and others; the role function mode, which represents a social adaptive mode centered on the roles a person occupies in his/her daily life, classified into three types: primary, secondary and tertiary, and which allows us to know aspects of the person's social life and how he/she performs each role; and the interdependence mode, another social mode that focuses on the relationships that an individual has, analyzing the structure and purpose of these relationships.^{7,8,9}

According to this model, the adaptation process begins when the person perceives, interprets, and gives value to a stimulus. These stimuli are classified into focal stimuli, which are the first stimuli perceived by the person; contextual stimuli, which are present in a specific context and situation and can intensify the perception of the focal stimulus; and residual stimuli, which are those factors present in the environment that cause undefined effects according to the context. This initial perception leads to a coping process, classified into two types: innate coping processes, which are those with which the person is born and which represent automatic processes that are used instinctively and acquired coping

processes, which are learned through the experiences that the person has in the course of his or her life.^{10,11} This coping process results in a level of adaptation, defined as a constant point of change, and can be integrated, compensatory, or compromised.⁶ The adaptation process is a set of changes that happen integrally, each older adult suffers this process differently, and that is influenced by physical aspects, such as the presence of diseases; psychological, such as self-esteem problems related to aging, and social factors, such as isolation and little participation and integration in the family, group or community.¹²

The adaptation model allows the nursing staff to perform interventions according to the information obtained and the level of adaptation of each person. In the case of older adults, research demonstrates the benefits of using this model and coupling it to the nursing intervention. For example, López Nolasco *et al.*, in their work "*Level of adaptation in the physiological mode before and after a physical activation program in the older adult*" analyzed the level of adaptation of older adults before and after a physical activation intervention. Before the intervention, the authors reported 24 older adults in a compromised state and one with an integrated level of adaptation; after the intervention, they noted that 23 older adults who were in a compromised state in the first measurement showed an integrated level of adaptation.¹³ In their research "*Effect of occupational therapy on the self-concept of older adults with depression*", López Nolasco, *et al.* reported that the intervention helped to modify the perception that older adults had of themselves and their appearance, promoting an acceptance of the changes presented at this stage.¹⁴

The present investigation allowed us to

know if the level of adaptation of elderly people according to the adaptive modes (physiological, role function, self-concept, and interdependence) of Sister Callista Roy's model was integrated, compromised, or compensatory. It also made it possible to assess whether this method can be the basis for nursing research, in particular, as a support in practice, in clinical judgment, and in the application of strategies and interventions, to benefit this sector of the population and their families.

Material and methods

Research with a quantitative approach, cross-sectional, retrospective, non-experimental, and descriptive design, carried out in the period May-June 2022 in the health units of the localities of Bomintzha and Tepatepec in the state of Hidalgo.^{15,16} Its objective was to measure and analyze the level of adaptation according to the adaptive modes in older adults of the mentioned localities. The population was 260 older adults, and a sample of 156 participants was obtained using the formula of proportions for finite populations, with a margin of error of 5%; the sampling technique used was systematic randomized probabilistic. The inclusion criteria were: older adults with or without chronic degenerative diseases living in Tepatepec and Bomintzha, affiliated to the health units of these localities. Older adults who did not sign the informed consent form were excluded; participants who had difficulty answering the evaluation instrument were eliminated. The research project was presented to the Ethics and Research Committee of the Tlahuelilpan High School of the Autonomous University of the State of Hidalgo "*Human Responses to Health and Illness*" in April 2022

and an approval opinion was obtained from the head of the committee for the realization of this work.

Before the interview for the application of the instrument, informed consent was obtained, explaining to the participant the procedure to be carried out, the benefits of the research, aspects regarding the confidentiality of the information obtained, the risk of the research—minimum according to article 17 of the Regulations of the General Health Law on Health Research¹⁸ and notifying that participation, as well as withdrawal from the research, was voluntary. The informed consent form recorded: date and time, name and signature of the participant, name and signature of one or two representatives of the participant who acted as witnesses, and name and signature of the investigator. Informed consent was obtained following the provisions of Section IV, Article 100, Single Chapter of Title Five "*Research for Health*" of the General Health Law.¹⁷ Likewise, the research followed the provisions of Articles 13, 14, Section V, 20, 21, and 22 of Chapter I, Title Two "*Ethical Aspects of Research on Human Beings*" of the Regulations of the General Health Law on Health Research,¹⁸ as well as the ethical principles contained in the Declaration of Helsinki concerning: risks, costs and benefits; vulnerable groups and persons; scientific requirements and research protocols; privacy and confidentiality; informed consent and registration and publication of the research and dissemination of results.¹⁹

The Adaptation Level of the Active Older Adult instrument was applied to the participants, a tool that measures the four adaptive modes according to Sister Callista Roy's model, which contains questions with

dichotomous response options (YES-NO), whose maximum value equals 1 and the minimum value equals 0. Mode I (physiological) consists of 42 items, mode II (self-concept) of 35 items, mode III (interdependence) of 17 items, and mode IV (role function) of 18 items. The instrument allows classifying the level of adaptation as integrated, compensatory and compromised; the interpretation for each adaptive mode is as follows: physiological mode, integrated: <15, compensatory: 15-18, compromised: 19-42; self-concept mode, integrated: <12, compensatory: 12-23, compromised: 24-35; interdependence mode, integrated: <7, compensatory: 7-12, compromised: 13-18; role function mode, integrated: <7, compensatory: 7-12, compromised: 13-18. The validity and reliability of the instrument is 0.87 in the physiological mode, 0.88 in the self-concept mode, 0.97 in the interdependence mode, and 0.96 in the role performance mode, according to Kuder Richardson (KR-20).²⁰

Data analysis was performed using the

Statistical Package for the Social Sciences (SPSS) version 25. The statistical technique was descriptive, frequencies and percentages were obtained for the sociodemographic variables gender, marital status, living with, occupation, presence of disease, and the level of adaptation of each adaptive mode. Then, the analysis of each variable was performed, and finally, the frequency and percentage of the level of adaptation for each adaptive mode were obtained.

Results

The sociodemographic variables (Table 1) showed a higher prevalence of the female gender (65.4%), and of the married population (44.9%) in the marital status variable. Forty-eight point one percent of the population lives with their children, while 32.1% lives with a partner. On the other hand, 21.2% of the participants are retired and 19.9% do not work. 52.6% of the population has some chronic degenerative comorbidity.

Table 1. Frequencies and percentages of sociodemographic variables

Sociodemographic variables		
	<i>f</i>	%
Gender		
Female	102	64.5
Marital Status		
Married	70	44.9
Widowed	44	28.2
Lives with		
Sons/daughters	75	48.1
Partner	50	32.1
Alone	16	10.3
Occupation		
Retired	33	21.2
Does not work	31	19.9
Presence of disease		
Sí	82	52.6

Source: own elaboration, 2022. n = 156.

In frequencies and percentages of the adaptation level (Table 2), it was found that 80.1% of the population has an integrated adaptation level in the physiological mode,

91.7% in the interdependence mode, and 93.5% in the role function mode. In the self-concept mode, 96.8% of the population has a compensatory level of adaptation.

Table 2. Frequencies and percentages of the variable level of adaptation in older adults in the localities of Hidalgo, Mexico.

Mode	Adaptation level							
	Integrated		Compensatory		Compromised		Total	
	f	%	f	%	f	%	f	%
Physiological	125	80.1	26	16.6	5	3.2	156	100
Self-concept	2	1.2	151	96.8	3	1.9	156	100
Interdependence	143	91.7	12	7.6	1	0.6	156	100
Role function	146	93.5	10	6.4	0	0	156	100

Source: own elaboration, 2022. n = 156.

Concerning the physiological mode (Table 3), a higher level of integrated adaptation was reported in women (53.8%), as well as in the married population (34.7%) for the marital status variable. This higher level of integrated adaptation was also observed in the population who live with their children (39.1%), who have some other occupation (41.6%), and who present some disease (43%).

copied (46.1%), as well as the population with some other occupation (44.9%) and with some illness (51.3%).

In the self-concept mode (Table 4), women presented a higher level of compensatory adaptation than men, with 62.1%; this was also the case in the married population (43%). The population living with children reported a higher level of compensatory

In the interdependence mode (Table 5), the female gender presented a higher level of integrated adaptation (59.6%). Likewise, a higher prevalence of integrated adaptation level was observed in the married population (42.9%), living with children (46.1%), and with some comorbidity (49.3%).

In the role function mode (Table 6), women showed a higher level of integrated adaptation (60.9%), as well as the married population (42.3%), living with children (46.8%) and presenting some comorbidity (50%).

Table 3. Frequencies and percentages of the physiological mode in older adults in the localities of Hidalgo, Mexico.

Variable	Physiological mode																																					
	Gender		Marital Status					Lives with					Occupation					Presence of disease																				
	Male	Female	Single	Married	Widowed	Free Union	Sons and daughters	Family	Alone	Partner	Others	Job	Retired	Doesn't work	Others	No	Yes	Yes																				
Indicator	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Integrated	41	26.2	84	53.8	20	12.9	54	34.7	35	22.4	16	10.3	61	39.1	12	7.7	12	7.7	39	25	1	0.6	13	8.3	23	14.7	24	15.4	65	41.6	58	37.1	67	43				
Compensatory	12	7.7	14	8.9	3	1.9	15	9.6	7	4.5	1	0.6	11	7	2	1.3	4	2.6	9	5.7	0	0	5	3.2	7	4.5	6	3.8	8	5.1	14	8.9	12	7.7				
Compromised	1	0.6	4	2.6	1	0.6	1	0.6	1	0.6	1	0.6	3	2	0	0	0	0	2	1.3	0	0	0	0	3	2	1	0.6	1	0.6	2	1.3	3	2				

Source: own elaboration, 2022. n = 156.

contrast, a compensatory life process in the self-concept-group identity mode is shown by 96.8%.

These results are similar to those reported by Chávez-Pérez et al. in their article “*Adaptation level of the older adult in the Casa de Día del Adulto Mayor de Apaxco, Estado de México*”, in which the participants presented an integrated vital process in physiological modes in 77.1%, interdependence in 97.1% and role function in 100%. Regarding the self-concept mode, a compromised vital process was found in 97.1%.²⁰

On the other hand, in the self-concept-group identity mode, it was reported that 1.2% of our population presented an integrated vital process, 96.8% had a compensatory vital process and 1.9% had a compromised vital process. These results are different from those presented by López-Nolasco et al. in their article “*Self-concept level in the elderly in the Gerontological Center of Tula de Allende, Hidalgo*”, in which 62.5% reported an integrated vital process, 32.5% a compensatory vital process and 5% a compromised vital process.²¹

The level of compensatory adaptation of the self-concept-group identity mode in 96.8% of our population is similar to the percentage reported by León-Cruz et al. in their article “*Level of self-concept in the elderly of the Gerontological Center of Tula de Allende, Hidalgo, after an educational intervention*”. This article mentions that before the intervention, the older adults reported a compensatory level in the self-concept mode of 94.7%.²²

In the role function mode, 93.6% of the studied population presented an integrated vital process, 6.4% showed a compensatory vital process, and 0% reported a compromised vital process. These results are similar to those presented by

Maldonado-Muñiz et al. in their article “*Adaptation level in the role performance mode of the older adult*”, in which 71.3% presented an integrated vital process, 28.2% a compensatory vital process and 0.5% a compromised vital process.²³

Conclusions

According to the results obtained through the instrument applied to our population, it is shown that a large part of the population (80.1%) presented an integrated adaptation level in the basic needs that encompasses the physiological mode; as well as an integrated level in the interdependence mode (91.7%); which means that the great majority of the participants showed an adequate state in their interpersonal relationships. In addition, an integrated level of adaptation in the role function mode was observed in 93.5% of our population, suggesting that the older adult finds stability in each role he/she fulfills with his/her relatives, group, or community. In contrast, a compensatory adaptation level in the self-concept mode was reported in 96.8%, which indicates that the perception that the older person has in his/her physical self and personal self is slightly unstable, resulting in a compensatory state in self-esteem, body sensation and self-image, expectations, self-concept and identity in a given group.

The level of compensatory adaptation in the adaptive mode of self-concept makes it necessary to carry out research in the elderly population of the state of Hidalgo that is focused on self-esteem, body, and functional perception of the elderly in the community, and that serves as a basis for experimental studies in which interventions are applied and their results evaluated.

References

1. **World Health Organization.** Aging and health [Internet]. Geneva: World Health Organization; 2022 [cited 2023 February 6]. Available from: <https://cutt.ly/xwPT8sx1>
2. **Esmeraldas-Vélez EE, Falcones-Centeno MR, Vásquez-Zevallos MG, Solórzano-Vélez JA.** Aging of the older adult and its main characteristics. *Scientific Journal of Research and Knowledge.* 2019;3(1):58-74. doi: [10.26820/recimundo/3.\(1\).enero.2019.58-74](https://doi.org/10.26820/recimundo/3.(1).enero.2019.58-74)
3. **National Population Council.** July 11 "World Population Day" [Internet]. Mexico: National Population Council; 2021 [cited 2023 February 8]. Available from: <https://cutt.ly/L6ZcBGB>
4. **National Institute of Statistics and Geography.** Statistics on the occasion of the International Day of Older Persons (October 1) [Internet]. Mexico: National Institute of Statistics and Geography; 2021 [cited 2023 February 8]. Available from: <https://cutt.ly/G6ZvyW5>
5. **Concha-Cisternas Y, Vargas-Vitoria R, Celis-Morales C.** Morphophysiological changes and risk of falls in the elderly: a review of the literature. *Salud Uninorte.* 2020;36(2):450-70. doi: [10.14482/sun.36.2.618.97](https://doi.org/10.14482/sun.36.2.618.97)
6. **Phillips KD, Harris RB.** Sister Callista Roy: Model of adaptation. In: Alligood MR, Tomey AM. *Models and theories in nursing.* 9th ed. Spain: Elsevier; 2018. p. 249-72.
7. **Naranjo-Hernández Y.** Meeting points between Roy's and Orem's theories in the care of the elderly with neuropathic ulcer. *Rev Cubana Enferm* [Internet]. 2019 [accessed February 2023]; 35(2):e1780. Available at: <https://cutt.ly/E69TTb9>
8. **Medina-Fernández IA, Gallegos-Torres R, Candila-Celis J.** Adaptation of self-concept mode in users with type 2 diabetes from a first-level unit. *Enferm Univ.* 2018;15(4):332-41. doi: [10.22201/eneo.23958421e.2018.4.532](https://doi.org/10.22201/eneo.23958421e.2018.4.532)
9. **Zhang J, Guo L, Mao J, Qi X, Chen L, Huang H, et al.** The effects of nursing of Roy adaptation model on the elderly hypertensive: a randomised control study. *Ann Palliat Med.* 2021;10(12):12149-58. doi: [10.21037/apm-21-2803](https://doi.org/10.21037/apm-21-2803)
10. **Callis A.** Application of the Roy Adaptation Theory to a care program for nurses. *Appl Nurs Res.* 2020;56:151340. doi: [10.1016/j.apnr.2020.151340](https://doi.org/10.1016/j.apnr.2020.151340)
11. **Flanagan N.** Persistent pain in older adults: Roy's adaptation model. *Nurs Sci Q.* 2018;31(1):25-28. doi: [10.1177/0894318417741095](https://doi.org/10.1177/0894318417741095)
12. **Salazar-Barajas ME, Lillo-Crespo M, Hernández-Cortez PL, Villarreal-Reyna MdlÁ, Gallegos-Cabriales EC, Gómez-Meza MV, et al.** Factors contributing to active aging in older adults, from the framework of Roy's adaptation model. *Invest Educ Enferm.* 2018;36(2). doi: [10.17533/udea.iee.v36n2e08](https://doi.org/10.17533/udea.iee.v36n2e08)
13. **López-Nolasco B, Maya-Sánchez A, González-Flores A, Luna-Sánchez J, Serrano-López J.** Level of adaptation in the physiological mode before and after a physical activation program in the elderly. *XIKUA Scientific Bulletin of the Tlahuelilpan High School.* 2018;6(12). doi: [10.29057/xikua.v6i12.3203](https://doi.org/10.29057/xikua.v6i12.3203)
14. **López-Nolasco B, Maya-Sánchez A, Cano-Estrada EA, Pérez-Corona R, Ortega-Pérez M, Serrano-Sánchez MD.** Effect of occupational therapy on the self-concept of older adults with

- depression. XIKUA Scientific Bulletin of the Escuela Superior de Tlahuelilpan. 2018;6(12). doi: [10.29057/xikua.v6i12.3209](https://doi.org/10.29057/xikua.v6i12.3209)
15. **Hernández-Sampieri R, Mendoza-Torres CP.** Research methodology: the routes: quantitative, qualitative and mixed. Mexico: Mc Graw Hill; 2018.
 16. **Hernández Sampieri R, Méndez-Valencia S, Mendoza-Torres CP, Cuevas-Romo A.** Fundamentals of research. Mexico: Mc Graw Hill; 2017.
 17. **Ley General de Salud** [Internet]. Ciudad de México: Cámara de diputados del H. Congreso de la Unión; 2022 [consultado 2023 febrero 15]. Disponible en: <https://cutt.ly/WwPYwuhV>
 18. **General Health Law** [Internet]. Mexico City: Chamber of Deputies of the Congress of the Union; 2022 [accessed 2023 February 15]. Available at: <https://cutt.ly/wwPYwIIm>
 19. **World Medical Association.** WMA Declaration of Helsinki - Ethical principles for medical research involving human subjects [Internet]. Geneva: World Medical Association; 2017 [accessed 2023 February 15]. Available from: <https://cutt.ly/n6ZvNqB>
 20. **Chávez-Perez PM, Soto-Pérez YY, Trejo-Mendoza NB.** Adaptation level of the older adult of the Casa de Día del Adulto Mayor de Apaxco, Estado de México. Geriatria Clínica [Internet]. 2019 [accessed Jun 2022]; 13(2):38-47. Available from: <https://cutt.ly/E6ZnHtA>
 21. **López-Nolasco B, Ramírez-Toledo A, Garay-Alvarado CA, Labra-Villeda AS, Maya-Sánchez A, Maldonado-Muñiz G.** Self-concept level in the older adult of the Gerontological Center of Tula de Allende, Hidalgo. XIKUA Scientific Bulletin of the Escuela Superior de Tlahuelilpan. 2020;8(15):16-9. doi: [10.29057/xikua.v8i15.5147](https://doi.org/10.29057/xikua.v8i15.5147)
 22. **León-Cruz A, García-López LY, López-Nolasco B, Maya-Sánchez A, Trejo-García CA.** Level of self-concept in older adults at the Gerontological Center of Tula de Allende, Hidalgo, after an educational intervention. Geriatria Clínica [Internet]. 2020 [accessed June 2022]; 14(01):6-8. Available at: <https://cutt.ly/86ZmVvQ>
 23. **Maldonado-Muñiz G, Vilchis-Guerrero IU, Ortiz-Godínez R, Rojo-Pérez S, López-Nolasco B.** Adaptation level in the role performance mode of the older adult. XIKUA Scientific Bulletin of the Tlahuelilpan High School. 2019;7(14):32-5. doi: [10.29057/xikua.v7i14.4327](https://doi.org/10.29057/xikua.v7i14.4327)