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ORIGINALES

Validation of an instrument to evaluate the community component of the integrated care strategy for prevalent childhood diseases (IMCI)

Validación de un instrumento para evaluar el componente comunitario, de la estrategia de atención integrada a las enfermedades prevalentes de la infancia (AIEPI)

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ABSTRACT:

Objective: Validate an instrument to evaluate the community component of the integrated care strategy for prevalent childhood diseases (IMCI).
Method: descriptive cross-sectional study, which sought to find the construct validity of the SIAC survey specified to measure community IMCI, through an exploratory factor analysis, which reduces the number of items that explained the constructs; 120 teenage mothers from the city of Cartagena, Colombia participated. The construction validation was carried out through the Exploratory Factor Analysis, with the Main Factors method, the Bartlett sphericity test and the measurement of the sampling adequacy of Kaiser-Meyer-Olkin (KMO coefficient) were performed using the SPSS statistical package. version 22.0.
Results: According to the values obtained in domains 1 (basic sanitation), 3 (breastfeeding and complementary feeding), 4 (immunizations), 5 (warning signs), 11 (care of pregnant women) and 13 (AIDS), the main axis factorization method was applied. In domain 7 (accident prevention) the principal component factorization method was performed.
Conclusions: the SIAC survey maintained good levels of validity after the change in the 7 domains, it is necessary to evaluate the cut-off points that allow a more sensitive and specific diagnosis of the degree of appropriation and application of the key practices of the IMCI strategy, for part of the caregivers of children under 5 years

Key words: Integrated Management of Childhood Illness, child, mother, Validity.

RESUMEN:
Objetivo: Validar un instrumento para evaluar el componente comunitario, de la estrategia de atención integrada a las enfermedades prevalentes de la infancia (AIEPI).
Método: Estudio transversal descriptivo, el cual buscó hallar la validez de constructo de la encuesta SIAC utilizada para medir AIEPI comunitario, mediante un análisis factorial exploratorio, el cual redujo el número de ítems que explicaban los constructos; participaron 120 madres adolescentes de la ciudad de Cartagena, Colombia. La validación de constructo se realizó a través del Análisis Factorial Exploratorio, con el método de Factores Principales, se utilizó la prueba de esfericidad de Bartlett y la medida de la adecuación muestral de Kaiser-Meyer-Olkin (Coeficiente KMO) mediante el paquete estadístico SPSS versión 22.0.
Resultados. De acuerdo a los valores obtenidos en los dominios 1 (saneamiento básico), 3 (lactancia materna y alimentación complementaria), 4 (inmunizaciones), 5 (signos de alarma), 11 (cuidado de la mujer gestante) y 13 (SIDA), se procedió a aplicar el método de factorización por ejes principales. En el dominio 7 (prevención de accidentes) se realizó el método de factorización por componentes principales.
Conclusiones: La encuesta SIAC mantuvo en los 7 dominios buenos niveles de validez después del cambio, se hace necesario evaluar los puntos de corte que permitan un diagnóstico más sensible y específico del grado de apropiación y aplicación de las practicas clave de la estrategia AIEPI, por parte de los cuidadores de los niños y niñas menores de 5 años.

Palabras clave: Atención Integrada a las Enfermedades Prevalentes de la Infancia, niño, madres, Validez.

INTRODUCTION

The IMCI strategy is defined as Integrated Care for Prevalent Childhood Diseases, it is promoted internationally by the Pan American Health Organization (PAHO), the World Health Organization (WHO) and the United Nations Fund for Children (UNICEF) [(1)]. It contains measures to promote, prevent, diagnose, and treat the diseases that are most prevalent in childhood, such as: Acute Respiratory Infection (ARI), Acute Diarrheal Disease (EDA), malnutrition, dengue, malaria, immunopreventable diseases, abuse infantile and alterations of growth and development [(2)].

The objective of the strategy is to help reduce infant morbidity and mortality because these diseases are easily preventable, thus promoting healthy growth and development in children under the age of five, especially among the most vulnerable groups, seeking through she, the participatory development of projects in high risk areas, to support the effective application of key practices [(3)].

The strategy has been implemented in different countries of the world, in China, for example, it has had a great impact on the health system since, after its execution, surveys adapted to this population were applied, where improvements in hospitals could be seen and childcare sites [(4)].

In the experiences of the implementation of the IMCI strategy in Latin America, a baseline survey has been used, which has made it possible to demonstrate the knowledge of parents and caregivers about its practices. This survey called the Community IMCI Information System (SIAC) was carried out by PAHO, WHO and UNICEF to measure the strategy, in order to know its effectiveness and identify the persistence of inappropriate practices of pregnant women and caregivers that may affect the health of boys and girls under 5 years of age [(5)].

In Colombia, the community component of the IMCI strategy has been carried out since 2007, applying non-validated surveys to identify and intervene in the health problems of children under the age of five and pregnant mothers [(6)].

The SIAC survey was created to evaluate the effectiveness of the IMCI strategy, no evidence has been found from studies that address its construct validity, and through this operation it will be possible to determine if it is a reliable and reliable instrument to measure the degree of appropriation that mothers have on the practices worked through the community IMCI component. The validation of an instrument is important to determine the quality of its measurement, one of its essential characteristics is to show that the instrument measures the construct for which it was designed [7].

Therefore, the purpose of this study was to validate the SIAC survey in a population of adolescent mothers, using an exploratory factor analysis.

MATERIALS AND METHODS

Design and sample

A descriptive cross-sectional study was carried out, which sought to find the construct validity of the SIAC survey, through an exploratory factor analysis that managed to reduce the number of items that explained the constructs in the original survey.

The population consisted of 120 adolescent mothers institutionalized in the Juan Felipe Gómez Escobar Foundation, in the city of Cartagena, Colombia, who voluntarily agreed to participate in the study, after signing an informed consent. In this place, the IMCI strategy is applied; Regarding the age of the mothers, this ranged between 16 and 24 years, for minors, informed consent was obtained from their parents or guardian.

This research was endorsed by the bioethics committee of the University of San Buenaventura in Cartagena.

Instrument

In this research, the SIAC survey was used, which is used to measure community IMCI, this was created by PAHO, WHO and UNICEF, the instrument is open to adaptations and validations. Evaluates 14 key practices, through 174 questions and seeks to measure the knowledge, attitudes and practices that caregivers apply. Since the population was institutionalized, the questions that did not require observation and verification at home were selected, in order to have an instrument that could make this measurement in institutionalized populations.

Practices that were not addressed at the foundation were also excluded, which resulted in an instrument with a total of 9 practices evaluated for 106 questions, keeping the options of multiple answers, questions with only one answer, and question breaks.

Table 1. Number of items applied in the pilot test.

Domain	Dimension	Pilot
one	Hygiene and sanitation measures	12
two	Child care	3
3	Breastfeeding and supplementary feeding	26
4	Immunizations	12

5	Warning signs	twenty-one
6	Feeding the sick child	4
7	Accident prevention	5
eleven	Pregnant woman care	18
13	HIV AIDS	5

METHOD

A construct validation was carried out through an Exploratory Factor Analysis, with the Main Factors method, through the statistical package SPSS version 22.0, the polychoric correlation matrix of the items that constituted the questions of the questionnaire was established.

After the analysis of main factors, the analysis was continued, through the factorization method of main axes; pTo check the adequacy of the sample to the factor analysis, the Bartlett sphericity test was used, which tests whether the correlation matrix is an identity matrix, and to check if the partial correlations between the variables were small, it was taken the Kaiser-Meyer-Olkin measure of sample adequacy (KMO coefficient).

When reviewing the composition of the domains found, after extraction, they were reduced to factors that individually measure healthy behavior. However, it was found that domain 2 (child care) and domain 6 (sick child feeding), in some items did not converge or were not sufficient to measure the components, which according to the original survey should be observed, which was not made them suitable for validation and were excluded from the analysis.

The analysis was developed individually for each domain, evaluating an instrument consisting of 9 domains and 106 variables, which after extraction were reduced to 7 domains and 24 variables, from the original scale.

RESULTS

The analysis was developed individually for each domain, since the survey is structured by key practices, which are conceptually different from each other, therefore, it was necessary to separately validate each construct.

First of all, for to check the adequacy of the sample to the factor analysis, the Bartlett sphericity test and the Kaiser-Meyer-Olkin sample adequacy measure (KMO coefficient) were used. According to the values obtained in domains 1 (basic sanitation), 3 (breastfeeding and complementary feeding), 4 (immunizations), 5 (warning signs), 11 (care of pregnant women) and 13 (HIV / AIDS), the main axis factorization method was applied. In domain 7 (accident prevention), the factorization method by main components was performed (See Table 2).

It was evident that the factorial structure of the SIAC survey, adapted to Spanish, in a sample of adolescent mothers attached to the Juan Felipe Gómez Escobar Foundation in the city of Cartagena, Colombia, was initially structured with 9 domains (basic sanitation, childcare, breastfeeding and complementary feeding, immunizations, warning signs, feeding the sick child, accident prevention, care of pregnant women

and AIDS) and 106 initial variables, information taken from the original survey. However, after extraction, it was found that domain 2 (child care) and domain 6 (feeding the sick child), in some items did not converge or were not sufficient to measure the components, which according to the original survey should be observed,

Table 2. Values of the test are sphericity and sample adequacy.

Domain	KMO coefficient	Bartlett's Sphericity Test	
one Hygiene and Basic Sanitation Measures	0.411	Approximate chi-square gl S.I.G.	110,486 55 0
3 Breastfeeding and complementary feeding	, 429	Approximate chi-square gl S.I.G.	246,370 171 , 000
4 Immunizations	, 505	Approximate chi-square gl S.I.G.	55,040 28 002
5 Warning signs	, 572	Approximate chi-square gl S.I.G.	402,211 210 , 000
7 Accident prevention	, 644	Approximate chi-square gl S.I.G.	50,030 10 , 000
eleven Pregnant woman care	, 471	Approximate chi-square gl S.I.G.	184,662 105 , 000
13 AIDS	, 515	Approximate chi-square gl S.I.G.	8,176 6 , 225

Source: study data

For domain 1, which evaluates basic sanitation, the results of the factor analysis showed a solution of 6 factors to explain 70.7% of the variance of the data and the fit to the theoretical model; However, when performing the matrix of rotated factors, it was observed that 5 factors contributed the greatest weight within the matrix, which corresponded to the questions that inquire about: problems with not drinking safe water, handling baby's feces, washing hands, garbage management, safe water consumption in the community and water management for baby consumption.

For domain 3 related to breastfeeding and complementary feeding, the factor analysis showed that an 8-factor solution was the best at explaining 71.9% of the data variance, reducing the dimensionality of the problem from 19 to 8 factors, however, when performing the extraction by main axes, a total of 4 factors were obtained

(related to the lactation time after the baby is born, with the first thing to give the baby after birth, knowledge of vitamin A and in which foods). could be found).

In domain 4 related to immunizations, the factor analysis showed that 5 factors explain 82% of the variance of the data, however, when plotting the variables in the rotated space, a total of 3 factors were obtained. selected, related to the age of application of the first vaccines, compliance with the complete vaccination schedule and vaccination schedule during pregnancy.

In domain 5 corresponding to the key practice of warning signs, the factorial analysis showed that 7 factors explained 70.8% of the variance, later when performing the rotation of factors this number was reduced to 5, in the case of variables related to the signs that indicate when to seek help in the event that the child has diarrhea, what to do in the event of diarrhea, who to turn to if there are signs of alarm against diarrhea.

The factorial analysis of domain 7 showed that the practice of accident prevention was explained by 3 factors with 83% of the variance. When performing the rotated factors matrix, two finally explained the domain better, these refer to the most common accidents. in the community and the prevention of these.

The domain 11 care of pregnant women, was reduced to 7 items that explained 75% of the variance, later through the sedimentation graph it was found that 4 factors explained the domain, which refer to the age at which the woman You must have your first child, who carried out the control during the pregnancy, who attended the delivery and the presence of complications during the delivery.

Finally, the factorial analysis of domain 13 revealed 3 factors that accounted for 84% of the total variance. The factors were subsequently rotated, leaving the variables referring to the means of transmission of HIV / AIDS and that related to the prevention of HIV / AIDS.

After the analysis that was developed individually for each domain and after extraction, the survey was reduced to an instrument that with 7 domains and 24 variables, allows to measure the constructs of the key practices of the Community IMCI strategy.

DISCUSSION

Through the following research, the validation of the SIAC survey was carried out, used to evaluate the application of the community IMCI, which becomes an important instrument for health professionals, taking into account that the World Health Organization reports evidence that highlights the role of working with parents and caregivers of children under 5 years around the change of their knowledge, attitudes and parenting practices, which directly influence the general state of health and well-being in early childhood. Given that the development of inappropriate practices can impact the increase in infant morbidity, delays in development, in physical growth, at the motor, cognitive and linguistic level [8].

This research was carried out in order to determine the construct validity of an instrument that evaluates 7 key practices of the IMCI strategy in its community component, and in this way being able to measure the knowledge, attitudes and practices in the intervened population, this can be Perform using instruments that meet

the objective of what is intended to be evaluated, in addition to being validated, in order to obtain results that are close to the reality of the practices evaluated [9].

In this sense, the skills of the persons in charge of the care in the home of the minors are part of the basic indicators to ensure the continuity and security of the care, preventing infant morbidity and mortality. Therefore, by having an instrument that involves various dimensions to specifically identify the competence for home care in caregivers and relatives of children under 5 years of age, which in turn allows the identification of the caregivers' own needs. in the local context, with adequate validity processes, it becomes a vital tool to consolidate effective intervention strategies [10].

The evaluated survey sought to provide the scientific community with a validated instrument in Cartagena, Colombia, which allows evidence with certainty of the knowledge, attitudes and practices on the care of children under 5 years of age by parents or caregivers, given the importance of studying this knowledge in parents of children from 0 to 5 years in order to project strategies aimed at promoting health in early childhood [11].

The SIAC survey was used as an instrument to obtain objective information on the assessment of attitudes, practices, knowledge and difficulties regarding the care of children under 5 years of age, by adolescent mothers. The information provided is useful for the development of educational and support programs regarding the implementation of the community IMCI strategy. This survey can be used to assess the individual needs of mothers and children in their care, in order to provide individualized support as needed [11].

Is Research managing to obtain an instrument that responds to the characteristics of the population and the local health system, and can be used in the Colombian and Latin American context, since similar cultural traits are shared for the upbringing of children under 5 years of age [12].

Through the Exploratory Factor Analysis carried out, the constructs of the instrument were determined, to carry out this analysis the application of the sample adequacy test (KMO) must be met, which indicates the degree of intercorrelation of the variables, if it is greater than 0,7 is considered feasible and for the Barlett sphericity test, a value of $p < 0.05$ (6) is considered adequate.

It was found that, within these 7 resulting domains, 2 yielded a KMO of less than 0.60, which indicated that they were not valid for the factor analysis by principal components, so the method of extraction by principal axes was used, since this is a recursive method similar to principal components, which allows us to justify the analysis because it seeks a greater interrelation in each factor [13].

This method allowed looking at the interrelation that the variables have with each other, reducing the variables to a smaller number, resulting enough to explain the domains or practices evaluated, thus eliminating all the questions that do not allow to clearly measure each of the domains [14].

The analysis was developed individually for each domain, this because the structure of the survey does not follow a specific construct, but is supported by various knowledge that nurture community work through 18 key practices that are part of the strategy. IMCI, therefore it was necessary to validate each construct individually [5].

Basic sanitation practices, breastfeeding, immunization, warning signs, care of pregnant women, HIV / AIDS and accident prevention, as basic components of the IMCI strategy that were subjected to exploratory factor analysis, allow obtaining a knowledge of the environment. sociocultural that can influence parenting styles, due in part to beliefs about certain aspects of daily life (physical environment, food and health), which may be a risk factor in the morbidity and mortality involved children under 5 years of age [15].

The validated instrument managed to reduce the SIAC survey to 24 items to measure the practices contained in said survey. To evaluate the attitude and knowledge of adolescent mothers regarding the care of children under 5 years of age, in a simple and low-cost way [14].

It was not possible to carry out a confirmatory factor analysis to investigate a priori the multifactorial structure of each scale, since the study only carried out one application of the instrument.

This survey becomes the first validated instrument in the Caribbean Region and in Colombia to evaluate the community component of the IMCI Strategy, an aspect that constitutes the main strength of the study, also allows it to be applied in context and evaluates the component. with fewer items than the original survey, making it more efficient in terms of time and financial resources.

It is suggested that in future research that intends to carry out the validation of this instrument, the participation of mothers from different age groups be linked, in order to have a broader vision of it. This aspect could constitute a limitation in the application of its results in different contexts.

CONCLUSIONS

The results obtained show that the SIAC survey that resulted from the validation process, maintained good levels of validity in the 7 domains after the analysis; however, it is necessary to evaluate the cut-off points that allow a more sensitive and specific diagnosis of the degree of appropriation and application of the key practices of the IMCI strategy, by the parents or caregivers of children under 5 years of age.

Likewise, it was possible to demonstrate that the instrument is a useful and necessary tool for evaluating changes in knowledge, attitudes and parenting and caregiver parenting practices, especially in aspects such as basic hygiene and sanitation measures, breastfeeding and complementary feeding, immunizations, identification of warning signs, accident prevention, care of pregnant women and HIV / AIDS, aspects important around early childhood health.

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