PREVENTION OF ZIKA VIRUS INFECTION IN PREGNANT WOMEN

PREVENÇÃO DA INFECÇÃO PELO ZIKA VÍRUS NAS GESTANTES

PREVENCIÓN DE LA INFECCIÓN POR EL ZIKA VIRUS EN LAS GESTANTES

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ABSTRACT

Objective: to evaluate the competences of the ACS in the development of the attributions expected and defined by the Ministry of Health in the habitual, risk prenatal actions, developed within the scope of the FHS, in relation to the prevention of infection by the zika virus during pregnancy. **Method:** quantitative, descriptive, cross-sectional study with data collection in 14 teams of the Family Health Strategy, through a questionnaire with three parts: A (coping with *Aedes aegypti*); B (low risk prenatal) and C (personal prevention measures against Zika virus), analyzed by clusters and Fisher's Exact Test. **Results:** better performance was observed in B, followed by A. The greatest difficulties were related to activity C. **Conclusion:** there is a favorable panorama of these professionals, although with difficulties in feeding information systems, low community participation and little integration with the work of the teams. **Descriptors:** Nursing; Community Health Workers; Zika Virus.

RESUMO

Objetivo: avaliar as competências dos ACS no desenvolvimento das atribuições esperadas e definidas pelo Ministério da Saúde nas ações de pré-natal de risco habitual, desenvolvidas no âmbito da ESF, em relação à prevenção da infecção pelo zika vírus na gestação. **Método:** estudo quantitativo, descritivo, transversal, com coleta de dados em 14 equipes da Estratégia de Saúde da Família, mediante um questionário com três partes: A (enfrentamento ao *Aedes aegypti*); B (pré-natal de baixo risco) e C (medidas de prevenção pessoal contra o Zika vírus), analisadas por agrupamentos e pelo Teste Exato de Fisher. **Resultados:** melhor desempenho foi observado em B, seguido de A. As maiores dificuldades estavam relacionadas com a atividade C. **Conclusão:** há um panorama favorável de atuação desses profissionais, embora com dificuldades quanto à alimentação dos sistemas de informação, à baixa participação comunitária e à pouca integração com o trabalho das equipes. **Descritores:** Enfermagem; Agente Comunitário de Saúde; Zika Vírus.

RESUMEN

Objetivo: evaluar las competencias de los ACS en el desarrollo de las atribuciones esperadas y definidas por el Ministerio de Salud en las acciones de prenatal de riesgo habitual, desarrolladas en el marco de la ESF, en relación a la prevención de la infección por el zika virus en la gestación. **Método:** estudio cuantitativo, descriptivo, transversal, con recolección de datos en 14 equipos de la Estrategia de Salud de la Familia, mediante un cuestionario con tres partes: A (enfrentamiento al *Aedes aegypti*); B (prenatal de bajo riesgo) y C (medidas de prevención personal contra el Zika virus), analizadas por agrupaciones y por la prueba exacta de Fisher. **Resultados:** mejor desempeño fue observado en B, seguido de A. Las mayores dificultades estaban relacionadas con la actividad C. **Conclusión:** hay un panorama favorable de actuación de estos profesionales, aunque con dificultades en cuanto a la alimentación de los sistemas de información, a la baja participación comunitaria y a la poca integración con el trabajo de los equipos. **Descritores:** Enfermería; Agentes Comunitarios de Salud; Virus Zika.

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INTRODUCTION

Basic Care (BC) is the main entrance door to the Unified Health System (UHS), developed through the Family Health Strategy (FHS). It has expanded and consolidated a new category of worker, the Community Health Worker (CHW), which is the main responsible for creating the link between the multiprofessional team and the community, for being a member of this community, welcoming each person in its entirety. In addition, it can develop a work aimed at improving the quality of life of families assigned to the team, through the development and implementation of actions aimed at disease prevention and health promotion.¹

Thus, CHW can act to control and prevent infectious diseases, such as those spread by the *Aedes aegypti* mosquito.² This urban vector transmits the dengue, chikungunya and Zika viruses, the latter being an arbovirus of the genus *Flavivirus* and of the family *Flaviviridae*. By the year 2007, the Zika virus was relatively unknown. That was when there was an outbreak, which severely affected the population of Yap Island, Micronesia. It is speculated that Zika virus has been inserted in Brazil during international sporting events, such as a canoeing event in Rio de Janeiro in 2014, through infected tourists from the Pacific Island who came to participate in the event and also during the 2014 World Cup in the Country.³⁻⁴

The transmission of the Zika virus is vector, through the bite of a female infected mosquito of the genus *Aedes aegypti* and *Aedes albopictus*, which once infected, remains in this condition during all its life cycles, being able to live from 30 to 45 days, possessing potential of infecting 300 people.⁵ Therefore, the golden rule to combat Zika virus infection is based on the development of prevention strategies aimed at eliminating the vector.³

The Zika virus presents tropism by cells of the central nervous system.⁶ In view of this fact, the incidence of microcephaly has been associated with Zika virus infection during gestation. The adequate development of the CHW work, in the prevention of infection by the Zika virus has great epidemiological and clinical importance in pregnancy.

The control of the dissemination of this vector is an arduous task, since it involves factors external to the health sector, which are characterized as determinants in the process of prevention of the dispersion of diseases. The following factors can be

highlighted: the appearance of urban agglomerations; improper housing conditions; inadequate supply of water; incorrect waste disposal; increased movement of people between nations and climate change due to global warming. For this reason, it is important that the conduct of endemic diseases be carried out in an intersectoral way, where there is the involvement of administrators and community, leading to a more effective confrontation.²

Faced with the presence of this scenario of transmission of a new disease, and its consequences in pregnancy, the importance of its prevention is emphasized, as well as qualified and humanized attention to prenatal care. It is of paramount importance that health professionals act in the multidisciplinary dimension, where a holistic assistance to the pregnant woman is provided. In the context of multidisciplinary care, CHW is seen as a dynamic and functional subject that increases and makes feasible the prenatal process, through the establishment of the link between the health service and the pregnant woman.⁷

OBJECTIVES

- To evaluate the competences of the CHW in the development of the attributions expected and defined by the Ministry of Health, in the prenatal actions of habitual risk, developed within the scope of the FHS, in relation to the prevention of the infection by the Zika virus during pregnancy.
- To demonstrate the potential of the CHW's work in the actions to prevent Zika virus infection, in the habitual risk prenatal, developed under the FHS.
- To note the weaknesses of the CHW's work in the prevention actions in Zika virus infection, in the prenatal period of habitual risk, developed under the FHS.

METHOD

A quantitative, descriptive, cross-sectional study based on the health system of a city in the south of Minas Gerais estate, with a specific cut of basic care, comprising 14 FHS teams from urban and rural areas. Inclusion criteria were to be over 18 years of age, not to comply with prior notice and to be in the role of CHW for at least one year. This latter criterion was included in order to reduce the research bias conditioned by the seasonality of the disease on which the competencies of the CHW are sought. Of the expected initial population of 98 CHW, two refused to participate in the survey, one was on leave

from work and 30 were on holiday, conditioning a sample of 65 participants. A questionnaire was applied to characterize the study population, individually, to the participants. The participant was then given a self-assessment of competences, in accordance with those recommended by the Ministry of Health, in relation to *Aedes aegypti* (A), low-risk prenatal (B) and personal prevention measures against Zika virus (C). The data collection took place in January 2017. The study project was submitted to the Research Ethics Committee (REC) in Humans of the Federal University of Alfenas, following the determinations of Resolution 466/2012 and approved under opinion 1,775,295. The

questionnaires were coded and stored in a database. The data were then analyzed by the Statistical method of Groupings, which verified the potentialities and fragilities, and Fisher's Exact Test, which evidenced the association between the characterization questionnaire and the questionnaire questions A, B and CC.

RESULTS

They will be shown in tables and figures followed by the description and analyzes performed. It begins with the characterization of the CHW, which will be followed by the presentation of the Analysis of Clusters and, soon thereafter, by Fisher's Exact Test.

Table 1. Distribution of CHW samples according to social and demographic variables. Alfenas (MG), Brazil, 2017.

Variables	N	%
Sex		
Female	56	85.15
Male	9	13.85
Age Group		
21 - 29	13	20
30 - 39	21	32.31
40 - 49	14	21.54
50 - 59	14	21.54
60 - 69	3	4.62
Race/color		
White	50	76.92
Brown	15	23.08
Marital status		
Not married	23	35.38
United	33	50.77
Separate	6	9.23
Widower	3	4.62
Education		
Complete high school	57	87.69
Incomplete Higher Education	3	4.62
Full Higher Education	5	7.69
Home		
Own	48	73.84
Leased	8	12.31
Assigned	5	7.69
Financed	2	3.08
Others	2	3.08
Number of children		
none	18	27.69
One	23	35.38
Two	17	26.15
Three or more	7	10.77
Family income		
Up to a minimum wage	1	1.54
One to two minimum wages	38	58.46
From two to three minimum wages	13	20.00
Three to four wages	8	12.31
Above four minimum wages	5	7.69
People dependent on family income		
One	4	6.15
Two	16	24.62
Three	21	32.31
Four	11	16.92

Five or more	13	20.00
Residence time in the neighborhood		
Up to 05 years	11	16.92
From 05 to 10 years	10	15.38
10 to 15 years	2	3.08
15 to 20 years	15	23.08
Over 20 years	27	41.54
Do you work in the neighborhood you live in		
Yes	46	70.77
No	19	29.23

As can be seen in table 1, the majority of interviewees are female (86.15%), the age group with the highest incidence is 30 to 39 years old (32.31%), the prevalent race/color is white (76.92%), followed by brown (23.08%). Regarding marital status, the term "united" refers to any type of union, with registration in a notary's office or not, which means marriage bonds, 8 and this item is prevalent (50.77%). In schooling, most CHWs have completed High School (87.69%). The house itself is the reality of 73.85% of the CHWs.

Most CHWs (35.38) have only one child. Regarding family income, 58.46% of CHWs live with one to two minimum wages, with 32.31% of CHWs answering that three people are dependent dependents. Most CHWs (41.54%) live in the neighborhood over a period of more than 20 years. Most CHW (70.77%) work in the neighborhood where they live, while the other 29.23% live elsewhere. Table 2 shows the trajectory of CHW in the labor market.

Table 2. Distribution of CHW, according to their insertion in the labor market, Alfenas (MG), Brazil, 2017.

Variables	N	%
Vocational course		
Yes	36	55.38
No	29	44.62
Performed course for CHW		
Yes	40	61.54
No	25	38.46
Registration in portfolio before being CHW		
Yes	47	72.31
No	18	27.69
Extra and Paid Activity		
Yes	8	12.31
No	56	86.15
Did not answer	1	1.54
You like to act as CHW		
Yes	60	92.31
No	5	7.69
Working time as CHW		
From 01 to 05 years old	35	53.85
From 06 to 10 years	16	24.62
11 to 15 years old	10	15.38
Above 15 years	3	4.62
Did not answer	1	1.54

According to table 2, 55.38% of the participants performed some professional training, among which the CHW technical course (12.31%), followed by the Nursing technician course (9.23 %). Regarding the CHW course, 61.54% reported having performed, while 38.46% did not. The majority of respondents to the survey, 72.31%, already worked with a formal contract before being CHW as traders (26.15%), household (7.69%) and secretary (7.69%). It can be observed that 12.31% of CHW perform other paid activity and work as CHW in an average of one to five years (53.85%). The employment opportunity (35.38%) was the main motivation

for being CHW, followed by liking working with people (24.62%), liking the health area (15.38%), collaborating to improve health community (12.31%) and already know and want to work in the health area (10.77%). The satisfaction level in the current occupation is 92.31% of the respondents. Concerning involvement in community activities, 41.54% participate in the religious community, 30.77% of the CHWs do not develop them, and 18.46% participate in a neighborhood association.

Analysis of Clusters - potentialities and weaknesses

The questions that constitute the questionnaire "A" refer to the activities recommended by the Ministry of Health for the CHW in the confrontation with *Aedes aegypti*, and type 1 (certainly, yes) and 2 (probably, yes) responses are favorable and type 3 (probably, not), 4 (certainly, not) and 5 (I do not know/do not remember) are unfavorable.

Figure 1. Dendrogram for the responses of questionnaire "A" - *Aedes aegypti*

The responses of the CHW regarding the *Aedes aegypti* coping are presented in figure 1, which shows the formation of two clusters that present distinct responses among each other, and, similar responses are observed within each group.

In the first group, formed by questions A1 (Forward the suspected cases of Zika/Dengue/Chikungunya to Primary Health Care Units (PHCUs), according to the guidelines of the Municipal Health Department); A2 (Acts together with the households, informing the residents about the disease, symptoms, vector and prevention); A3 (Informs the resident about the importance of verifying the existence of Zika/Dengue/Chikungunya larvae or transmitting mosquitoes at home and peri domicile, drawing attention to the most common breeding sites in their area of action); A6 (Encourages residents to commit to preventive actions, spontaneously and routinely) and A14 (When Zika/Dengue/Chikungunya is suspected to be identified at home visit, people should already be advised about oral hydration by CHW or by the family health team and referred to the nearest health unit), it is noted that the type 1 response was indicated by almost all the participants, which shows their potential in relation to the activities mentioned.

In questions A7 (Refer to the Endemic disease combat agents - ADCE for cases of breeding grounds that are difficult to access

or requiring the use of larvicides/biolarvicides), A9 (Tells the supervising nurse and ADCE the existence of larval breeding grounds and/or the Zika/Dengue/Chikungunya who depend on chemical/ biological treatment, the intervention of health surveillance or other interventions of the public power), A10 (Communicates to the supervising nurse and ADCE presence of closed properties and refusals to visit) and A13 (Performs home visits to patients with Zika/Dengue/Chikungunya), type 1 responses are the majority, but, also, show, type 2, 3, 4 and 5 responses, which warns us that some microarea may not be adequately met with regard to prevention of diseases transmitted by *Aedes aegypti*.

Question A15 (Registers, systematically, the actions carried out on the appropriate forms, in order to feed the information systems) differs from the other questions in the group because it presents a larger number of answers 3 and 4, that is, it shows an increase in negative responses regarding the feeding of health information systems.

In the second group, it can be seen that questions A4 (check the home and/or peridomicile, accompanied by the resident, to identify places of existence of objects that are or may become breeder of the vector); A5 (Directs and accompanies the resident in the removal, destruction or sealing of objects that

may become mosquito breeding sites, mechanically removing, if necessary, the immature forms of the mosquito); A8 (It promotes meetings with the community to mobilize it for Zika/Dengue/Chikungunya prevention and control actions, as well as sensitize the population to the importance that all households in an area infected by *Aedes aegypti* be the access of the ADCE); A11 (Notifies suspected cases of Zika/Dengue/Chikungunya in specific form and informs the ADCE team) and A12 (Meets weekly with ADCE, to plan joint actions, exchange information on suspected dengue cases, evolution of indices *Aedes aegypti*

infestation, catch rates, preferential breeding sites and measures being or should be taken to improve the situation), present a similar behavior in which a significant number of type 3 and 4, and some type 5 responses, ie a negative result. It is important to note that questions A8 and A12 present more type 3 and type 4 responses, indicating that CHW does not perform community participation activities and does not work in conjunction with ADCE. Question A11 has a relevant number of type 4 responses, which shows the professional's difficulty in reporting suspicious cases and informing the rest of the FHS team.

Figure 2: Dendrogram for the "B" questionnaire responses - Low risk prenatal care

The types of response reveal the formation of two groups: one formed by question B4, (Check the registration of pregnant women in SisPreNatal, as well as the information filled in on the Card of the Pregnant Woman), which presents the most varied response pattern, type 3, 4 and 5, which may indicate that a part of the pregnant women in the area covered by these CHW is not being adequately attended to, and the other group formed by questions B1, B2, B3, B5, B6, B7, B8 and B9. In questions B1 (Directs women and their families on the importance of prenatal, breastfeeding and vaccination) and B3 (Refer all pregnant women to the health service, seeking to promote their early intake for the first visit, and to monitor subsequent consultations), these are similar to present the majority of responses 1 and 2, that is, positive.

It is verified that B7 (Informs the nurse or the doctor of his team, if the pregnant woman shows any of the alarm signs: fever, chills, foul smelling discharge, blood loss, pallor, frequent uterine contractions, absence of fetal movements, hardened, red and hot breasts and pain when urinating) presents some type 3 and B8 responses (Identifies situations of risk and vulnerability and forwards the pregnant woman to a Nursing or necessary), type 4. Such response patterns, although they have a majority of positive responses, ignite the warning signal, since risk situations in pregnant women should be recognized and sent to competent professionals with agility.

Question B9 (Conducts home visits during the gestational and puerperal period, accompanies the breastfeeding process, guides the woman and her companion about family planning) presents responses of type 3

and 4. Here, it is worth emphasizing the importance of the DV throughout the cycle pregnancy-puerperal, which, for these results, has not occurred for the pregnant women attended by some agents.

Question B6 (It guides pregnant women about the frequency of consultations and conducts an active search for faulty mothers) resembles B1, B2, B3, B7 and B8 because they present similar patterns of type 1 and type 2 responses.

It is noted that question B5 (Accompany the pregnant women who are not performing the prenatal care at the local basic health unit, keeping the staff informed about the progress of the prenatal care performed in another service) presents a small percentage of CHW

that does not accompany the pregnant women who perform the prenatal consultation in another unit, which compromises their assistance by the FHS team.

The questions that constitute the questionnaire "C" refer to the personal prevention measures against the Zika virus, recommended by the Ministry of Health, to be carried out by the Community Health Agent (CHW). The answers of type 1 (sure, yes) and 2 (probably, yes) are favorable and responses of type 3 (probably not), 4 (certainly not) and 5 (I do not know/do not remember) are unfavorable. The responses of the CHW regarding the personal prevention measures against the Zika virus are presented in figure 3.

Figure 3. Dendrogram for the "C" questionnaire responses - Personal prevention measures against the Zika virus.

In this third part of the questionnaire, two groups were also established: one consisting of questions C8 and C9, which presented a different pattern of responses, as it showed all types (1, 2, 3, 4 and 5), together with a frequency pattern in the distribution of the answers, and the other formed by the questions of the "C" questionnaire, C1, C2, C3, C4, C5, C6 and C7, in which the response pattern 1 and 2 predominated.

In the questions of the second group, C2 (Guidance on the need for attention to the nature and quality of what is ingested - water, food, medicines - or has contact and the potential of these products affect the development of the baby) and C7 pregnant women who, if there is any change in their state of health, up to the 4th month of

gestation, or in the persistence of preexisting illness at that stage, to communicate the fact to the health professionals - obstetricians, ultrasound physician and other staff members of health) have a majority of type 1 and 2 responses and a small amount of type 4 responses, ie some professionals do not perform such orientation activities.

Questions C1 (Inform the pregnant woman about the risk related to the use of drugs with teratogenic potential) and C6 (Guide the pregnant women to remain, especially in the period between dusk and dawn, in places with barriers to the entry of insects such as: However, they also show type 3, 4 and 5 responses, that is, there is a failure to perform these activities by CHW, which may

contribute to the occurrence of fetal malformation.

Questions C3 (Protect yourself from insect bites during gestation, avoiding mosquitoes at times and places), C4 (Protect yourself from insect bites during pregnancy using clothing that protects exposed parts of the body) and C5 on the need to consult the doctor for the use of repellents and to closely check on the label the guidelines on the concentration and frequency of use recommended for pregnant women) present most type 1 (certainly yes) and 2 (probably, yes), but the occurrence of type 3 response (probably not) is observed. Thus, some CHW do not fulfill the need to advise on the protection measures against the sting of *Aedes aegypti*.

In order to carry out the associations, the Fisher Exact Test was used, through which all possible comparisons were made between the questions that measured the potentialities and/or weaknesses in the CHW performance in the prevention of Zika virus infection during pregnancy (parts A, B and C), with the variables of demographic profile, social profile, training profile and the time of performance in question. The studied variables, which presented p-value less than or equal to 5%, were considered associated.

The female participants answered "certainly, yes" to the questions "Registration of actions/feeding information systems", "Monitoring of pregnant women who do not perform prenatal care at the unit" and "Realization of DV during the gestational, puerperal and lactation periods maternal", and responded "certainly not" to the issue of "Weekly meeting with ADCE" more often than male participants. CHWs who have incomplete tertiary and higher education have answered "probably yes" and "certainly, yes" more frequently in the "community meetings" question than those with lower levels of education.

The more people depend on the income of this professional, the more he answered "certainly, yes" to the questions "Identification of risk situations and referrals of pregnant women" and "Guidance for pregnant women to stay in places with a barrier to insect infestation between dusk and dawn."

Regarding the length of time in the neighborhood, the less active CHW responded "yes," more frequently to the following question: "Guidance on hydration and referral of suspected cases". When the CHW is a resident of the neighborhood in which they work, the answer "certainly, yes" was the highest frequency in the question "Reporting suspicious cases" in relation to those who are

not residents. They answered, 100% "certainly, yes", to the question "Communication to nurses and ADCE about the existence of breeding grounds for larvae and/or mosquitoes", participants who said they had previous occupation as secretary, tradesman, maid and technician in Nursing.

From the answers of those who have already worked with a signed handbook, there was a greater frequency of responses "certainly, yes" in the questions "Realization of DV in patients with Zika/Dengue/Chikungunya", "Identification of risk situations and referral of pregnant women" and "Guidance on the nature of what is ingested" in comparison to those who did not work.

The CHW that dedicate themselves exclusively to the profession present more answers "certainly, yes" in the questions "Registration of actions/feeding information systems", "Inform the pregnant woman about the risk related to teratogenic drugs", "Guidance for pregnant women remain in places with a barrier to enter insects between dusk and dawn", "Orient the pregnant woman that, if there is a suspect case in the same household, the infected person should rest under mosquito nets" and "Orient the pregnant woman, if there is a suspect case in the same household, one must use protective screens on doors and windows", than those who perform other paid activity.

Respondents who have already completed a vocational course had 100% "yes, sure" answers in the question "Referral of suspect cases to the health unit", compared to those who did not have the same characteristics.

Failure to complete the course for CHW was associated with a higher frequency of response "certainly, yes" to the questions "Routing to ADCE of breeding sites difficult to access", "Protection during pregnancy against insect bites", "Need for consultation with the doctor for the use of repellents and careful reading of the labels".

The CHW who like to act as such gave most of answers "certainly, yes", to the questions "Follow-up of pregnant women who do not perform prenatal care in the unit", "Orient the pregnant woman to seek a health professional if there is a change in her health status by the fourth month or if the symptoms persist". The professionals who do not like to act as such probably responded "more frequently" to the "community meetings" and "counseling pregnant, so that if there is a suspect case in the same domicile, one must use protective screens on doors and windows".

Those professionals who participated in neighborhood associations, the association of parents and teachers and the church/religious community gave a greater frequency of answers "yes, yes" and "probably yes" to the question "Inform the pregnant woman about the risk related to teratogenic medicinal products".

DISCUSSION

The characteristics of female, scholarly and qualified labor found in this study coincide with the group of professionals from another research, who evaluated the work of the CHW of São Bernardo do Campo/SP.⁸

A study carried out in the municipality of Camaragibe/PE indicates that the characteristics of the agents are only of the female sex is due to the fact that there is resistance to the male CHW by the population served, being this resistance impediment of the access to the dwelling by the male CHW at times.⁹

Since the creation of the PCHW in the State of Ceará in 1987, female dominance was a common feature, since at that, at the time, almost 100% of the hirings were for women, in order to insert gender in the labor market and to thrive socioeconomic conditions of the State.¹⁰

It is worth mentioning that, although the CHW have a majority "unified" civil status, another large part of it is separated or single. In single-parent families there is an ancestry of separated women and mothers. They assume the leadership role by committing themselves to the home and the preservation, protection and development of their family.¹¹

Another important factor, evidenced in the analysis, is the schooling of the participants who have, in most, complete secondary education. This level of education exceeds that required by the MS as a requirement for the exercise of CHW, since, according to Law 11,350 of October 5, 2006, the person must have completed elementary school to act as CHW.¹²

CHWs reside in the neighborhood for a long period, which may explain the involvement of more than half of CHWs in community activities. This result is analogous to that found in a survey conducted in Florianópolis, where the majority of CHWs reside in the same community for a period between 20 and 25 years. In the same research, reference is made to the interpersonal relationship and bond with the community, in which it is stated that the CHW are the only workers of the health team of Primary Care who must reside

in the place where they work for, at least two years, complying with the requirements established by the Ministry of Health.¹³

The majority of the CHW mentioned liking the profession, however, the greatest motivation for being CHW was the visualization of job opportunity, the same result found in another study.⁸

When analyzing the pattern of responses of questionnaire "A" (coping with *Aedes aegypti*), it was possible to ascertain the potentialities and fragilities in the actions of the CHW in relation to the activities advocated by the MS to confront *Aedes aegypti*. In this way, actions such as the referral of suspected cases to the FHT, action at the home, taking information about the vector, the diseases transmitted by it and how to avoid its proliferation, encourage residents to take responsibility prevention.

In a study carried out in the city of Divinópolis/MG, the CHW are articulators of the work process of the team, since they reside in the area of activity and have a detailed knowledge of the community, which allows, easier access, to the homes. The study also states that the link between the community and the health unit occurs in several ways, the main one being a home visit, when the CHW professional has a chance to know the problems of the population, communicate to the health team and return to the avoiding aggravations and remedying the problems encountered, highlighting the crucial role that the CHW has in developing health promotion and disease prevention actions.¹⁴

Regarding the weaknesses, in relation to the activities that the CHW share with the ADCE, it is noticed that, although the majority of the participants gave positive answers, some responded negatively, which indicates a failure in the integration process between these two professionals. Through the methodology of the problem, a study identified the absence of articulation between CHW and ADCE in the activities of prevention of Dengue/Zika/Chikungunya.¹⁵

The CHW referred, as a main complaint in the work process, the lack of training regarding their integration with the ADCE, being the disorganization, lack of communication and protocols, together with the lack of definition of the tasks of each professional, the main difficulties in the performance of both those responsible for the prevention and control of dengue. In view of this, the aforementioned authors propose a definition of responsibilities and workflow for CHW and ADCE, since all play a relevant role

in the development of surveillance actions and are charged with the health of the population of their micro areas and so that there is no duality and fragmentation of prevention actions.¹⁶

As for the filling of forms for the purpose of feeding information systems, it is noticed that there are failures on the part of the CHW. In a similar study, it is inferred that the completion of the information system tokens is an activity of the CHW, however, this is pointed out as dull by them.¹⁷

In face of all the analyzed activities, the CHW showed greater competence in low risk prenatal actions, which show a large part of positive responses. However, there are reservations to be made with the intention of alerting and contributing to the improvement of care for these pregnant women. The result found is antagonistic to that of a study carried out in Salvador, Bahia, which evaluated the practices of the CHW and found that the activity of informing the nurse or physician of the team was not present, if the pregnant woman had any warning signs.¹⁸ Another study attention to the importance of reducing the maternal mortality rate, one of the goals of the Millennium not yet achieved, and for this, it is necessary that health services have quality assistance, integrality and interdisciplinarity in prenatal care.¹⁹

In order to carry out this qualified assistance, the CHW should adequately carry out the activities recommended by the Ministry of Health and, since the follow-up to the pregnant woman is one of the strong fronts of FHS, the positive result in the study in question is explained. The non-conference of the registration of pregnant women in SisPreNatal, as well as the information of the pregnant woman's card, is a gap evidenced in the activities carried out by the CHW in prenatal care. The recommended activities such as the registration of pregnant women in SisPreNatal, as well as the information filled in on the pregnant woman's card were not mentioned as actions of the daily life of the CHW, in a research carried out in Salvador/BA, which evaluated the practices of these professionals.¹⁸ The index of responses of type 3 (probably not), 4 (certainly not) and 5 (I do not know/do not remember) of questionnaire "C", indicates the doubts regarding diseases that, with the exception of dengue, are in the daily routine of Primary Care, as was also found in health education activity with CHW de Chapecó/SC, in which the survey on the subjects that generated the most doubt among these professionals was Dengue, Zika and Chikungunya.²⁰

With regard to combating *Aedes aegypti* and personal prevention measures against Zika virus, many activities are aimed at CHW, but, ADCEs also play an important role in controlling this disease. There are difficulties of the ADCE to carry out their activities, due to the lack of support, cooperation and community disposition, besides the inconvenience of not being the residents during the RVs and, when they are found, there is often resistance in receiving them at home. These difficulties cause damage to the integrality of the assistance that must be offered to the population. The first author also mentions that the ADCE do not have agreement on their attributions, but they recognize the target population, and, also, identify that there are failures in the communication process between the professionals of the team, as in the transfer of information. In this last issue, the transfer of information, the need to level knowledge and the integration of activities between ADCE and CHW is evident.²¹

The transmission of the Zika virus by *Aedes aegypti* is a recent issue and, therefore, professionals often find themselves unprepared to offer appropriate guidance to the community. An extension project found that the CHW of the Municipality of Videira, Santa Catarina, were not adequately trained to act as propagators of information regarding the prevention of Dengue, Chikungunya and Zika virus transmission.²²

Through the Association Analysis performed using Fisher's Exact Test, it was possible to observe a greater association of female CHW with positive responses. It is worth noting that women, by improving their living conditions due to work, consequently make progress in the community where they live, and that the performance of men as CHW, although less significant, allows different perceptions regarding the families.⁸

Regarding schooling, a study carried out in two municipalities in the state of Mato Grosso and in the state of Rio Grande de Mato Grosso and São Gabriel do Oeste, which addressed the differences in the work process of the CHW, inferred that the good schooling of these professionals can contribute to better assimilation of new knowledge and to facilitate the accomplishment of the actions with the families served.²³

Although it is common to think that the dwelling time in the neighborhood positively influences the quality of the CHW's performance, the results of the work show that the dwelling time did not have an impact

for the care, that is, the CHW residing less time also responded from positive way.

The results of the study show that more than 60% of participants live in the neighborhood where they work for more than 15 years (Table 1). A survey showed that the majority of CHWs lived in the community where they worked for about ten to 19 years, and the shortest time quoted was four years.¹⁷ This fact makes them compliant with the MS requirements, which places, the prerequisite living time, of at least, two years in the neighborhood in which they will work for the CHWs, since these agents need to know the territory assigned in greater depth to properly exercise their work.²⁴ In another study, importance is attributed not only to the time of worker housing, but, also, to empathy with the community as an integration factor, which reinforces the pertinence of the result found in this study.¹⁷

About working in the neighborhood where he lives, the result shows that hiring the CHW did not follow what is recommended by the MH. Going back to table 1, almost a third of the workers do not live in the neighborhood where they work. The CHW who live in the neighborhood have responded in a more positive way, which is reinforced by a study in which being a resident of the community itself is important, making the barriers between professional and resident less evident, which allows the formation of very peculiar roles and approximation of the parts, since the residents can easily be found by the CHW. In this way, the professional can identify the health problems and take the necessary measures.²⁵

The CHW, who in their previous occupations, had to deal with the public, had a higher percentage of positive responses. It was verified that the majority of the CHW of Florianópolis previously, had, function of attending to the public, like salesperson, clerk, secretary, supermarket box, room assistant, professor, besides 10% of the workers who mentioned to have fulfilled functions like assistant of office Nursing auxiliaries and Nursing technicians, and in order to better utilize this characteristic, health services could encourage them to participate in health education activities.¹³ The ease of communication is a crucial quality in the work of CHW, since it is considered the mediator between the community and the health unit.²⁶

In view of the absence of other studies on CHW already having worked with a formal contract, it is inferred that the previous professional experience provided the CHW

with a broader look at the activities to be developed with greater competence in the prevention of infection by the Zika virus in pregnant women. On exclusive dedication to the profession, one survey says that 10% of workers assumed to perform other activities outside working hours to supplement family income. The same author mentions that this fact confers fragility to the actions of the CHW, since it interferes in the commitment with the work activities, as well as with the quality of life of the subject.¹³

The non-valuation of the professionals that are involved with the social demands was pointed out as an obstacle to their performance, being reason of demotivation. Insufficient schooling and overload, accompanied by frustration and emotional involvement, may leave the FHS professional in a situation of vulnerability, as well as the users he/she receives.²⁷

The association between the failure to complete the CHW course and the positive responses prompted questions about the quality of the course offered and its practical applicability, since there was no positive impact on the quality of the CHW work. A study carried out in Rio de Janeiro/RJ, which aimed to reflect and discuss the role of the CHW as a popular educator, pointed out that these professionals recognized their scientific knowledge as insufficient for professional practice, and, also, criticized the guidelines and training that are offered by their supervisors. In this way, changing this framework would result in a better quality for the families.²⁸

There are criticisms about the concept that the work of CHW is simple and tends to stand out for solidarity, which disqualifies the worker. This misperception is used as an argument for not investing in the proper formation of CHW by managers and policy makers, as this would imply a salary increase and political recognition.²⁹

The results show that, regardless of the taste for the profession, the CHW adequately exercises the profession. In a study carried out in the Family Health Program in the city of Teixeira/PA, it was verified that the CHW are satisfied with their work for reasons such as the recognition of the families, the improvement of the health of the population and the indicators of morbi-mortality. However, barriers to work are also found, such as the lack of recognition of managers, the low socioeconomic conditions of the community and health of the CHW. The satisfaction experienced by the CHW in the day to day work is a reason for delight and

professional achievement, however, the limitations make it difficult to work, affecting the health of the professional, both physical, and psychic.³⁰

In relation to participation in community activities, one of the responsibilities of the CHW is to involve the community in health activities, using a partnership with community social resources, such as neighborhood association, church/religious community, parents 'and teachers' association, council guardianship, among others, to achieve this goal. However, its non-participation reduces the chances of success in its activity.

CONCLUSION

The knowledge of the action of CHW in the prevention of Zika virus infection in pregnant women through its self-assessment is important for the identification of the fragilities and the potentialities of the work of this professional so that the management of people by competence in primary health care, in the Unified Health System in the city of Alfenas/MG. As shown throughout the study, the characterization of the CHW sample is made up of a majority of young, white caucasian women from the Southeast region from the urban area and residents of the neighborhood where they work for a long period. The most important community activity was church/religious community. The training and performance profile is a full-time high school and a vocational course, and the majority have been in the profession for at least one year and had formal work before being CHW in the public service functions.

The study of the attributions expected and defined by the Ministry of Health in the habitual risk prenatal actions carried out within the scope of the FHS by the CHW in relation to the prevention of infection by the Zika virus in gestation as well as dengue and chikungunya, allows to draw a panorama of these professionals. There was a positive performance in the low risk prenatal activities (B), followed by the action on *Aedes aegypti* (A) and, finally, even though there was a positive performance of the CHW, the one with the greatest difficulty was the activities of personal prevention measures against the Zika virus (C).

In this paper, the difficulty of CHW regarding the feeding of information systems, low community participation and little integration with the ADCE's work was highlighted. These fragilities are considered as lacking in intervention, since UHS is based on an epidemiological, multiprofessional model and on networks for health intervention, for

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which it is essential to fully integrate all professionals.

When faced with the negative performance of some CHW, it is necessary to contextualize that the infection by zika virus is a new disease, however, its vector *Aedes aegypti* and the way in which the diseases mentioned in the research are disseminated are old acquaintances population and health professionals. Likewise, it takes into account the organization of the scope area of the FHS, in which each CHW responds to a micro area where 400 to 750 people reside, thus, the failure of a professional can endanger the lives of many families and many pregnant women.

As a contribution to Nursing, it is worth noting the mapping of the main weaknesses of the CHW, given that the latter, although they are not Nursing professionals, are under the supervision of the FHS nurse, nowadays one of the largest labor camps for those who followed the legacy of Florence Nightingale, for which it is necessary to increase research in the search for scientific evidence that guides the increase in the quality of care.

As limitations of the study, the following are enumerated: difficulty in collecting data, because it was performed in a post-municipal elections period; the coincidence with the period of school holidays, during which many professionals also take vacations; and because it was carried out in a single municipality in the South of Minas Gerais, not allowing generalizations for the other regions of Brazil. However, the studies used as a theoretical reference showed similar limitations.

ACKNOWLEDGEMENTS

To Prof. Dr. Simone Albino da Silva for the dedication, for the knowledge transmitted, for believing in our potential from the beginning and for guiding us with wisdom and capacity in carrying out this work.

To Prof. Dr. Flávio Bittencourt, member of the Statistical Nucleus of the Federal University of Alfenas - Unifal-MG, for the effort, the dedication and the science, in the elaboration of the statistical analysis of the work.

To the nurses, of the Family Health Strategy, who intermediated the contact with the Community Health Workers.

To the CHW of the Family Health Strategy of the municipality, who accepted to participate in the study and provided the event of the study.

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Submission: 2017/06/22

Accepted: 2017/11/25

Publishing: 2017/12/15

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J Nurs UFPE on line., Recife, 11(Suppl. 12):5339-53, Dec., 2017

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