

Clinical Aptitude of Suspicion of Malignant Breast Pathology in Primary Care Physicians

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1. Abstract

1.1. Background: Until 2020 breast cancer is the main type of cancer diagnosed worldwide, in the case of Mexico is diagnosed in late clinical stages in almost 50% of the cases, is essential that the general practitioner count with the clinical suspicious of breast cancer to begin the diagnostic protocol established in the IMSS.

1.2. Objective: Determine the level of clinical aptitude of the suspicious of breast cancer in doctors of the first level of attention.

1.3. Methodology: Cross-observational study, analytic, with general practitioners and medical residents of UMF 20 Vallejo, by clinical cases with early manifestations of breast cancer and differential diagnosis. Non-parametric statistics, frequency tables, averages, and correlations between variables.

1.4. Outcomes: The clinical aptitude found in the 5 studied groups was: General – Very low, R1 – Low, R2 – Low, R3 – Low, Family Doctor – Low, applying the Jonckheere Terpstra test we didn't find significative differences between the groups in their clinical aptitude ($p=0.053$).

1.5. Conclusions: The clinical aptitude found is like the reported in other studies made in similar populations.

2. Introduction

Since the period of 1955-1960 we have the first mortality reports of breast cancer in Mexico, where we find 4 deaths due to breast cancer in every 100,000 women, increasing continuously up to 9 deaths for every 100,000 women in 1990 decade.

In Mexico the diagnostic approach and therapeutics for breast can-

cer weren't standardized until 1994 when the first National Consensus of Breast Cancer was performed in Colima, Mexico. The conclusions of this consensus were spread rapidly in Oncological specialties, but they haven't been spread on the other specialties where we found Family Medicine in Mexico.

According to GLOBOCAN 2020, breast cancer is the main type of cancer in mexican population with 15.3% of all the cases and 28.2% of the cancer cases in mexican women. Knaul and collaborators have shown that breast cancer is a huge amount of premature death because up to 60% of women that die due to breast cancer have 30-59 years at defunction [1].

There are many risk factors to develop breast cancer as a familiar history of breast cancer, ovarian cancer, mutations in BRCA1, BRCA2 and other genes, but these are present only in 10% of all breast cancer cases. The other 90% are spontaneous cases and they depend on the presence of many risk factors described for breast cancer and can be classified in:

- Biological: Female, age, familiar history of breast cancer, atypical ductal hyperplasia, high mammary density, early menstruation (<12 years), lately menopause (>52 years), having gene mutations susceptible for breast cancer
- Iatrogenic: Thorax radiotherapy
- Reproductive: No breastfeeding, no pregnancy, first pregnancy >30 years, hormonal replacement therapy >5 years.
- Lifestyle: Obesity, overweight, sedentarism, drinking, smoking [2].

The risk of developing breast cancer after oral contraceptive use is a relative risk of 1.3 after 5 years, this was reported with a 95% confidence interval, this means an increase of 30% of developing breast cancer [4]. In the Clinical Practice Guideline about breast cancer in the first contact attention smoking and contraceptive use are not described as risk factors for breast cancer [5]. In our population there are major risk factors for breast cancer, these are obesity, sedentarism and familiar history of breast cancer. Protective factors in our population include breastfeeding [6].

In the attention model proposed by the Mexican Social Security Institute the main subject is to prevent, this begin in the Familiar Medicine Units where we find a systematic proposal of health care promotion, prevention, early diagnosis and control of chronic diseases, reproductive health being applied according to NOM-041-SSA2-2011, relative to breast cancer there is emphasis in the self-exploration done by the patient and bringing capacitation for this by the last 20 years. The early diagnosis protocol for breast cancer includes breast clinical exam and mammography as a first step, if the patient has an abnormal mammography of clinical exam, she's remitted to the general hospital to perform a mammary ultrasound and biopsy in necessary situations, after this the patient is send to the corresponding service to begin treatment [7].

According to NCCN 2015 the initial approach of a patient with breast cancer must include: Breast clinical exam (including axilla), mammography, mammary ultrasound, value metastases symptoms, in case of advanced disease a hematic cytometry, hepatic function tests, biopsy revision and determination of hormonal receptors [8]. In first contact we dispose of these elements except biopsy and determination of hormonal receptors, from this we can propose that clinical aptitude in the family doctors is essential for the correct management and optimization of resources and time to bring the patient the opportunity to arrive at Oncology service in a nice time for her treatment.

ENSANUT 2006 reported clinical breast evaluation was done in only 22% of women aged 40-69 years, this included mammography, in ENSANUT 2012 found only in 26% of women aged 50-59 years and 15% of women aged 40-49 years a mammography was performed [7].

According to WHO, mammography can decrease breast cancer mortality in >50 years women in 20-30% in countries that mammography is performed at least in 70% of the targeted population, ENSANUT 2012 found in breast cancer patients in only 46% of them a mammography was performed for breast cancer detection [7]. In Mexico breast cancer is diagnosed in advanced stages in 56% of all the cases, 10.5% in metastatic stage, with a lack of treatment disposal [2].

Unger-Saldana and collaborators made an estimation of the time that breast cancer patients delay beginning the oncological treatment, we will introduce some concepts used by Unger-Saldana to

have a better explanation of the observed phenomenon:

- Total interval: Time lapse since the symptom onset until beginning of treatment.
- Patient interval: Time lapse since problem identification until first medical consultation.
- System interval: Time lapse since first medical consultation until beginning of treatment.
- Diagnosis interval: Time lapse since first consultation until diagnosis confirmation by biopsy.
- Treatment interval: Time lapse since histopathological diagnosis since beginning of treatment.
- Prehospital interval: Time lapse since first consultation until patient arrival to oncology service.
- Hospital Interval: Time lapse since first consultation with oncologist until treatment beginning.

In this study Unger-Saldana and collaborators found this worrying data for each type of interval exposed before: Total interval average of 7 months (range 4-14), patient interval average of 0.3 months (range 0-2 months), system interval average of 5 months (range 3-9 months), diagnosis interval average 4 months (range 2-8), treatment interval average 1-month, prehospital interval average 2 months (range 2-14 months). Also, a positive relation between a major delay and the probability of finding advanced disease, they explained that a delay of 1 month in patient interval can conditionate a 40% major probability of finding advanced breast cancer, and 1 month in the health system a 40% probability of finding advanced disease. The average delay in our health system is 5 months, in other latin-american countries as Brazil and Colombia this is similar, although the recommended time by the WHO is 3 months [9].

According to Unger-Saldana and collaborators, another obstacle is that in first consultation of these patients the first contact doctor doesn't have the clinical suspicion of breast cancer, the main specialist in this is the Family Doctor in 47% of the cases, then gynecologist in 29.2 and finally oncologist in 9.6%; 80% of the speciates asked an imagen study, only 37.8% of these specialists had the clinical suspicion of breast cancer although there were abnormal findings in 71.4% of image studies, the patients referred to have a variable number of medical consultations until their arrival to oncology having >3 consultations in two thirds of the cases [10].

The delay in breast cancer diagnosis means that in time of confirming the presence of cancer, the medical staff will find a more advanced clinical stage of this pathology which has a negative impact on the prognosis and spend done by the Mexican Social Security Institute and the families of these patients. We will explain this with a table done by Knaul and collaborators in 2002 (Table 1) where costs are in mexican pesos, the conversion to 2020 mexican pesos and 2020 dollars [11]:

Table 1: Cost of breast cancer attention by year by patient of different clinical stages 11

Clinical stage	Cost (2006 mexican pesos)	Cost (2020 mexican pesos)	Cost (2020 US dollars) [1 dollar = 21.1 mexican pesos]
1	71,863	147,319	6,981
2	105,990	217,279	10,297
3	158,068	324,939	15,400
4	199,274	408,511	19,360

2.1. Image Methods

The usage of imagen methods let us detect, characterize, and evaluate disease extension, also we can track the mammary alterations. It's known that gold standard for cancer diagnosis is histopathological exam, in non-palpable alterations we hay biopsy by percutaneous needles and trucut guided by ultrasonography. In the imagen studies available on the mexican primary care units we the these:

- Mammography (MG): This is the only imagen method that decreases breast cancer mortality in 21% in developed countries, having a sensitivity of 77-95% and specify of 94-97%, but this depends on mammary density. Digital mammography has major advantages on analogical system because it reduces the repetition percentage due to best image quality, giving less radiation.
- Mammary ultrasound (US): This is a complementary tool for mammography, it can differentiate cysts, solid nodules, benign and malignant alterations, vascularity. This is the most recommended image study in these cases: High-mammary density,

negative mammography, complementary evaluation of alterations in physical exam of abnormal mammography, breast implant evaluation, guide of percutaneous biopsy, planning radiotherapy treatment, axilla ganglion evaluation [12].

There is an evaluation of mammary-density in mexican population done in 2016 where the most predominant pattern of the American College of Radiology was B-pattern, but in our clinical practice we can find C or D patterns in almost 25% of the patients, needing an additional image study to complete the initial evaluation of breast in these patients [13]. The presence of C and D mammary densities is associated with the presence of mammography non-valuable BIRADS 3 or 4 alterations [12].

The Breast Imagen Data System (BIRADS) was created in 1993 by the American College of Radiology with the main purpose of standardize mammography reports bringing a specific vocabulary to mammary alterations by different imaging methods. Breast abnormalities are grouped in 7 different categories with an estimated malignant percentage and clinical approach for each one [2] (Table 2).

Table 2: BIRADS categories and proposed clinical approach by the Colima Mexican Consensus of breast cancer 2019.

Category	Description	Clinical approach
0	Inadequate for diagnosis 13% malignancy	Complementary image method evaluation (US, RM) and compare with previous studies
1	Negative Normal breast	Annual mammography in women after 40 years
2	Benign findings	Annual mammography in women after 40 years
3	Probably benign <2% malignancy	Unilateral reevaluation at 6 months, bilateral annual evaluation
4	Probably malignant 4a – Low suspicion (2-10%) 4b – Intermediate suspicion (10-50%) 4c – Moderate suspicion (50-95%)	Requires biopsy
5	Tippically malignant (>95%)	Require biopsy
6	Malignancy confirmed by histopathological study	Waiting for treatment or valuation of treatment response

2.2. Medical Education

In the Colima Mexican Consensus of 2019, the oncology specialists suggested the inclusion of medical oncology as a subject in the academic programs of the medicine schools and give capacitation to all the medical students about the breast cancer early diagnosis [2].

In the Mexico National Autonomous University (UNAM) we find that Medicine Faculty does not have a specific time to the teaching of medical oncology [14], same situation in Superior Studies Faculty Iztacala [15] and in Superior Studies Faculty Zaragoza we found that a specific time was present in the teaching of detection

of most the main types of cancer [16, 17], in the Polytechnic National Institute (IPN) we found that in Superior Medicine School [18] and National Medicine and Homeopathic School [19, 20], a specific time was assigned to medical oncology in the 10th semester and the medical students are sent to the oncology service of a hospital to learn about the early diagnosis of the disease. In the Operative Program of the Family Medicine Specialty of the Mexican Social Security Institute we find a specific time of 1 month designated for medical oncology [21]. Although administrative procedures are done, it's very difficult to execute this because there are a lot of detriments are done by the oncology specialists to the medical students and family medicine residents.

2.3. Clinical Aptitude

Clinical aptitude is defined as the organized approach of many disease manifestations with the propose of giving a diagnosis, treatment, and prognosis, as the implementation of preventive actions for the integral attention of every patient. There are many compounds of clinical aptitude such as: Risk factor recognizing ability, elaborate prognosis ability, make differential diagnosis ability, explain risks and benefits of many conducts to the patients [22]. Clinical aptitude is the best quantitative-objective indicator in medical education and evaluation, it's the key in the development of every specialist [23].

Moreno-Segura and collaborators made a study about clinical aptitude in mexican family doctors about the main health problems in Mexican Institute of Social Security finding that in breast cancer this clinical aptitude was 56 in a 0-100 scale [21].

Garcia-Mangas and Viniegra-Velázquez realized a estimation of clinical aptitude of mexican family medicine residents in the main medical specialties (Gynecology, Pediatrics, Internal Medicine and General Surgery) having an average of 36.8 in 0-100 scale, recreating clinical scenarios where every correct answer counted as 1, every incorrect answer as -1, giving the resident the opportunity to answer "I don't know" and know their own limitations, the most of the residents had a "Very superficial" and "Superficial" clinical aptitude. They propose to generate a deep change to the development of clinical aptitude and that every year of experience should be more evident than a simple hierarchy, they also found that the resources limitations that exist in first contact medicine in Mexico lead the family doctor to skip procedures in the diagnosis and management of many diseases [24]. In another study they found that the used procedures in medical education as a passive role oriented to the rutinary attention of the patient with emphasis in pathology and not in the patient suffering can result in a negative influence on the clinical aptitude of the doctor, the call this "Inappropriate Academic Conditions" as an effect of routine, administrative procedures, vertical and rigidity of attention model where the standardized model rules, having the consequence that the doctor look equally to every patient and treat them in the same way without individualization of every patient [25].

3. Problem

The interest of performing this study was born from the worrying Mexico data in the delay of breast cancer diagnosis resulting in >50% of the cases being diagnosed in advanced clinical stages. Also, the current evidence about clinical aptitude in primary care physicians in Mexico is unacceptable for the diagnostic approach of any type of cancer, in this case breast cancer. Our main objective was to determine the clinical aptitude level in mexican primary care physicians.

4. Method

This was a cross-observational study, it was done in Familiar Med-

icine Unit 20 of the Mexican Institute of Social Security, it counts with 30 family medicine consulting rooms, 2 occupational medicine consulting rooms, 4 odontology consulting rooms, 1 clinical laboratory, these are coordinated by 3 heads of clinical department, having a total of 36 family doctors in the morning and 26 in the afternoon, also 64 residents of family medicine. The research population were the familiar doctors, residents of family medicine and general practitioners of Familiar Medicine Unit 20.

4.1. Inclusion Criteria

- Family Doctors
- General Practitioners
- Family Medicine Residents

4.2. Exclusion Criteria

- Doctors who didn't wanted to join the study
- Doctors in incapacity, license, holiday or COVID19 agreement at the study time
- Residents who were at Temporal Attention Centers due to COVID19 pandemic at the study time
- Residents who were at Complementary Practice at the study time

4.3. Elimination Criteria

- Doctors/residents who didn't answer the questionnaire
- Doctors/residents who didn't deliver the questionnaire
- Doctors/residents who wanted to leave the study at anytime

4.4. Questionnaire

The applied questionnaire was content validated about breast cancer with 5 clinical cases with 5 enounces with 5 questions every one, having 25 questions by clinical case giving a total of 125 questions. The clinical case formulation was according to Clinical Practice Guideline about breast cancer, American Cancer Society Guidelines, Colima Mexican Consensus with emphasis in early diagnosis and oportune reference of breast cancer patients. It also contained a sheet for general data of the participant.

Every right question was equal to 1, having possible scores from 0 to 125 grouped this way:

- Random: 0-25 right answers (<2 of 10)
- Very Low: 26-49 right answers (2.1-3.9 of 10)
- Low: 50-74 right answers (4-5.9 of 10)
- Superficial: 75-86 right answers (6-6.9 of 10)
- Good: 87-105 right answers (7-8.4 of 10)
- High: 106 or more right answers (8.5 -10)

All enounces were also divided in these categories:

- Identifying risk factors: Background or actual conditions in the patient and its family that increase the possibility of having a specific evolution – 10 enounces.

- Compatible diagnosis: Good clinical judgment according to the individual of familiar findings of the clinical case leading to a specific disease– 25 enounces.
- Clinical reasoning: Presence of clinical/paraclinical data that lead to the diagnosis of a disease – 25 enounces.
- Integral management: Diagnostic procedures in the individual or its family that have clearly more benefits (diagnostic precision) that prejudices (unnecessary pain, adverse effects) in the biological and familiar situation – 25 enounces.
- Patient tracking: Every surveillance and control actions of the patient at short, medium, and long term in their individual or familiar spheres– 25 enounces
- Prognosis: Signs, symptoms of paraclinical findings that are part of a disease that suggest a positive or negative evolution at individual of familiar spheres of the patient – 15 enounces.

General data sheet was asked for every participant when they joined the study having these:

- Age: Number of years.
- Gender: Male, female.
- Graduation year: Year when the participant graduate from university.
- Precedence University: Mexico National Autonomous University (UNAM), Polytechnic National Institute (IPN), other
- Work time: Morning, afternoon.
- Category: Family Doctor, First Year Medical Resident, Second Year Medical Resident, Third Year Medical Resident, General Practitioner.
- Antiquity at Mexican Institute of Social Security: Years of antiquity at Mexican Institute of Social Security.
- Antiquity at Familiar Medicine Unit: Years of antiquity at Familiar Medicine Unit.

Clinical aptitude was valued by 5 clinical cases where we wanted to recreate clinical variations of the presentation of breast cancer to measure the aptitude of family doctors, residents, and general practitioner, these are:

1. Locally advanced breast cancer patient (CS III-B) with multiple risk factors and deficient first evaluation.
2. Lung-metastatic breast cancer patient having pleural effusion and oncologic dyspnea (CS IV).
3. Early breast cancer (CS I-A) with multiple risk factors.
4. Spine-metastatic breast cancer patient (CS IV)
5. Hip-metastatic breast cancer patient (CS IV)

The possible answers are true/false with typical clinical behavior in Mexico primary care physicians as reference to a general zone hospital where the family doctor need to differentiate an oncolog-

ic, gynecologic, or orthopedic problem so the patient can get more benefit from the specialist.

In our questionnaire we didn't board breast cancer complications because the primary care physician is the ideal specialist to diagnose and give initial, palliative treatment of oncology reference for integral valuation of patients. Breast cancer complications due to disease progression or treatment adverse effects include cardiac failure due to thorax chemotherapy/anthracycline use, secondary osteoporosis due to aromatase inhibitors, hypertension due to chemotherapy, peripheral neuropathies due to axilla radical dissection, oncologic anorexia/cachexia, etc.

4.5. Results and Statistical Analysis

Data recollection and analysis was done by using IBM Standard Package for Social Sciences (SPSS) version 25.0.

In the general characteristics of our study population we found a total of 84 participants, at the type of participant we found 4 (4.8%) general practitioners, 18 (21.4%) first year residents, 14 (16.7%) second year residents, 9 (10.7%) third year residents and 39 (46.4%) family doctors, about gender 25 (29.8%) of all the participants were male and 59 (70.2%) were female, about precedence university 41 (48.8%) were from UNAM, 33 (39.3%) were from IPN and 10 (11.9%) were from other universities, and clinical aptitude of all participants was 6 (7.1%) for random, 2 (2.4%) for very low, 35 (41.7%) for low, 23 (27.4%) for superficial, 17 (20.2%) for good and 1 (1.2%) for high (Table 3). The averages of age were 41.5 years for general practitioner (SD ± 10.66), 28.67 years for first year residents (SD ± 2.02), 28.86 years for second year residents (SD ± 1.95), 29.22 years for third year residents (SD ± 3.66), 40 years for family doctors (SD ± 6.728), average graduation year in our population was 2004.75 for general practitioners (SD ± 11.26), 2018 for first year residents (SD ± 1.61), 2017.5 for second year residents (SD ± 2.02), 2016.89 for third year residents (SD 4.16), 2006.15 for family doctors (SD ± 7.329), average IMSS antiquity was 6.75 years for general practitioners (SD ± 2.06), 1.33 years for first year residents (SD ± 0.3), 1.86 years for second year residents (SD ± 0.77), 2.33 years for third year residents (SD ± 0.5), 11.79 years for family doctors (SD ± 6.49), average Familiar Medicine Unit antiquity was 4.75 years for general practitioners (± 0.434), 0.00 for first year residents (SD ± 0.00), 1.14 years for second year residents (SD ± 0.363), 2.33 years for third year residents (SD ± 0.50), 8.62 years for family doctors (SD ± 6.2), the obtained grade 0-10 scale was 3.9 for general practitioners (SD ± 2.09), 5.51 for first year residents (SD 0.80), 6.24 for second year residents (SD ± 1.04), 6.15 for third year residents (SD ± 1.25) and 5.60 for family doctors (SD ± 1.91), clinical aptitude was 2.5 for general practitioners (SD ± 1.29), 3.28 for first year residents (SD ± 0.46), 3.86 for second year residents (SD ± 0.94), 3.89 for third year residents (SD ± 1.16) and 3.59 for family doctors (SD ± 1.27). (Table 4)

Table 3: General characteristics of the participants with total number and percentages.

	n	Percentage
Category		
General Practitioner	4	4.8
First year resident	18	21.4
Second year resident	14	16.7
Third year resident	9	10.7
Family doctor	39	46.4
Gender		
Male	25	29.8
Female	59	70.2
Precedence University		
UNAM	41	48.8
IPN	33	39.3
Other	10	11.9
Clinical aptitude		
Random	6	7.1
Very low	2	2.4
Low	35	41.7
Superficial	23	27.4
Good	17	20.2
High	1	1.2

Table 4: Average (Ave) and Standard Deviation (SD) for age, graduate year, Mexican Institute for Social Security (IMSS) and Familiar Medicine Unit (UMF) antiquity, grade 0-10 scale and clinical aptitude by category.

Category		Age	Graduta year	IMSS Antiquity	UMF Antiquity	Grade 0-10	Clinical aptitude
General Practitioner	AVE	41.5	2004.75	6.75	4.75	3.9	2.5
	SD	±10.661	±11.266	±2.062	±4.349	±2.09	±1.29
First year resident	AVE	28.67	2018.61	1.33	0	5.51	3.28
	SD	±2.029	±1.614	±3.144	±0.000	0.80	±0.46
Second year resident	AVE	28.86	2017.5	1.86	1.14	6.24	3.86
	SD	±1.956	±2.029	±.770	±.363	±1.04	±0.94
Third year resident	AVE	29.22	2016.89	2.33	2.33	6.15	3.89
	SD	±3.667	±4.167	±.500	±.500	±1.25	±1.16
Family Doctor	AVE	40	2006.15	11.79	8.62	5.66	3.59
	SD	±6.728	±7.329	±6.469	±6.210	±1.91	±1.27

When we made the average comparison by subject evaluated by the questionnaire explaining clinical aptitude as: 1 – Random, 2 – Very low, 3 – Low, 4 – Superficial, 5 – Good, 6 – High.

We had these results:

- General practitioners: Identifying risk factors - Superficial (4.25), diagnosis – very low (2.25), clinical reasoning – very low (2.75), integral management- very low (2.75), tracking – very low (2.00), prognosis – random (1.75).
- First year resident: Identifying risk factors – superficial (4.26), diagnosis – low (3.50), clinical reasoning – low (3.83), integral management – low (3.5), tracking – low (3.22), prognosis – low (3.06).
- Second year resident: Identifying risk factors – superficial (4.5), diagnosis – superficial (4.07), clinical reasoning – low (3.93), integral management – low (3.71), tracking – low (3.43), prognosis – superficial (4.21).
- Third year resident: Identifying risk factors – superficial (4.89), diagnosis – superficial (4.00), clinical reasoning – low (3.44), integral management – low (3.44), tracking – low (3.89), prognosis – superficial (4.22).
- Family doctor: Identifying risk factors – superficial (4.1), diagnosis – low (3.62), clinical reasoning – low (3.56), integral management – low (3.46), tracking – low (3.38), prognosis – low (3.71). (Table 5)

Table 5: Participant category averages of clinical aptitude by subject evaluated.

Category	Identify risk factors	Diagnosis	Clinical reasoning	Integral management	Tracking	Prognosis
General practitioner	4.25	2.25	2.75	2.75	2	1.75
First year resident	4.28	3.5	3.83	3.5	3.22	3.06
Second year resident	4.5	4.07	3.93	3.71	3.43	4.21
Third year resident	4.89	4	3.44	3.44	3.89	4.22
Family doctor	4.1	3.62	3.56	3.46	3.38	3.71

Our chosen statistical test was Jonckheere Terpstra for two main reasons, although Kruskal Wallis is the most used test when we have >2 groups with qualitative dependent variable, Jonckheere Terpstra has the main characteristic that every group precedes of proceeds the next one, this is because in Mexico you cannot become medical specialist immediately after completing university, but you can exercise medicine just after completing university as general practitioner, you must go into a medical residence that in the case of family medicine it lasts 3 years and finally you become family doctor and the second reason it's because our sample does not fit Gauss curve and the sample size is little. With this non-parametric test, we found the next significances in every subject and in global of the applied questionnaire: Clinical aptitude P=0.53, identifying risk factors P=0.576, diagnosis P=0.334, clinical reasoning P=0.882, integral management P=0.396, tracking P=0.052 and prognosis P=0.045.

Finally, we made an estimation of clinical aptitude in function of some interesting characteristics just as age, IMSS antiquity, UMF antiquity and graduation year, finding:

- Age: Clinical aptitude drops from nearby 3.5 (low) at age of 30 years to approximately 2.8 (very low) at age of 60 years.
- IMSS Antiquity: Clinical aptitude drops from 3.5 (low) at 0 years to 3 (low) at 25 years of IMSS antiquity.
- UMF Antiquity: Clinical aptitude drops from 3.5 (low) at 0 years to 2.9 (very low) at 25 years of UMF antiquity.
- Graduate year: Clinical aptitude rises from 2.8 (very low) if graduate was in 1990 to 3.5 (low) if graduate was in 2020.

5. Discussion

5.1. Summary

In Mexico the Mexican Social Security Institute is the most important institution in the medical education of the Family Doctors because most of the Family Doctors that Mexico generates come from the Mexican Social Security Institute, also this is the health care institution that gives medical attention to the most mexican population, so the clinical aptitude of the family doctors in Mexico is critical to give an integral attention to all the patients from the beginning. In 2020 nearly 3700 places were offered to general practitioners to begin the medical specialization course on family medicine.

The results of non-parametric Jonckheere Terpstra test revealed

that there was no significant difference between the groups with the clinical aptitude level.

We also made a estimation of the clinical aptitude in function of age, IMSS antiquity, UMF antiquity and graduate year, we found that the relation between age and clinical aptitude was negative – at more age, less clinical aptitude; IMSS antiquity and clinical aptitude was negative – at more IMSS antiquity, less clinical aptitude; UMF antiquity and clinical aptitude – at more UMF antiquity, less clinical aptitude; graduate year and clinical aptitude was positive – at most recent graduate year, more clinical aptitude.

In general terms we can conclude that our 5 groups without matter on age, IMSS antiquity, UMF antiquity, graduation year, are similar with a low clinical aptitude for breast cancer suspicion.

Sadly, in Mexico the Family Doctor usually receives the other medical specialties contempt because it's a horizontal specialty, affecting the medical formation of the family medicine residents in Mexico, they usually are thrown out of consulting of the other medical specialties, also they are teased by other medical residents just for being family medicine residents.

5.2. Comparison with Existing Literature

García-Mangas and collaborators found a bad clinical aptitude in residents of family medicine in the main health problems, with an average of 36 in 0-100 scale which is not so similar with our findings where this was 56 in 0-100 scale, but their methodology was a little different because for every wrong answer they discounted 1 from the total score of every participant.

Moreno and collaborators also found a bad clinical aptitude in the main consultation problems having an average of 55 in 0-100 scale for breast cancer, this is like our findings and the scoring of the questionnaire was similar, so we can conclude this is a consistent finding in our study population.

It was difficult to find similar studies in population like the one we studied in this research because clinical aptitude studies found are focused on medical students of many universities mainly in the United States of America, we found few similar studies done in population comparable with ours but only two of them board clinical aptitude on oncologic problems.

5.3. Implications for Research and Practice

Familiar medicine is the most important specialty in any health system, with the purpose of giving integral attention for the pa-

tient at the main health problems where the family doctor has the privilege of being the specialist with more clinical aptitude for any health problem.

Having a very low/low clinical aptitude in our study population suggest this phenomenon not only occurs in our unit, it occurs in the whole Mexican primary care units, giving a non-optimal clinical attention to our patients due to a lack in diagnosis abilities in potentially oncologic patients, a deficient risk factor identification, non-optimal use of available resources, non-integral management, inability to give a prognosis due to deficient clinical approach and a continuous increase of spending resources in the attention of breast cancer patients diagnosed in late clinical stages.

The presence of the family medicine residents in oncology services is very important for the public health of any country because here is where we can perfectionate our clinical abilities to put in service and benefits of our patients.

This study is an attentive call for all the specialists in Medical Oncology, Oncologic Gynecology and Oncologic Surgery to include the family medicine resident in their consulting rooms because the worst differential diagnosis in lots of patients is cancer, and it's diagnosed in advanced clinical stages in Mexico. The non-inclusion of family medicine residents in this can perpetuate the described phenomenon of late diagnosis in cancer we can find in Mexico's most patients, this has been documented by Dr. Karla Ünger-Saldaña and if we don't do anything this will continue and last for years.

As we request oncology specialists' attention, we must encourage familiar medicine residents to show how important we are in this health system, because we are the only specialist capable of doing an integral management of every patient.

Also, we suggest the creation of an online course about breast cancer basics to improve breast cancer fundamentals, especially in October, which is the breast cancer month worldwide and we can give this tool to primary care physicians and not only to the patients.

The result of this study gives us important data, such as clinical aptitude does not improve in the desired way from the general practitioner to the family medicine specialist in Mexico. This means there's something we are doing wrong with medicine students and residents, and we must re-evaluate ourselves to find and correct the problem.

5.4. Strengths and limitations

Strengths:

- This study lay the foundations to consider creating an online course about the basics of breast cancer to step up clinical aptitude in the Mexican first contact doctors.
- Our results are extrapolable to the first level attention in Mexico Institute for Social Security because the health policies are

the same, and this is the institution that contributes with the most family doctors to Mexican health system.

Limitations:

- Participant's low interest in answering the questionnaire.
- Little time to answer the questionnaire due to number of patients at the consulting rooms.

References

1. Knaul FM, Nigenda G, Lozano R, Arreola-Ornelas H, Langer A, Frenk J. Cáncer de mama en México: Una prioridad apremiante. *Salud Publ Mex.* 2009; 51(2): 5335-44.
2. Cárdenas J, Erazo V, Solís AA, Arce C, Bargalló JE, Bautista V, Cervantes G, et al. Consenso Mexicano sobre diagnóstico y tratamiento del cáncer mamario. 8ª revisión. Colima. 2019; 5(40): 121-34.
3. International Agency for Research on Cancer – World Health Organization. Mexico factsheet GLOBOCAN 2020 (Internet).
4. Morch LS, Skovlund CW, Hannaford PC, Iversen L, Fielding S, Lidegaard O. Contemporary hormonal contraception and the risk of breast cancer. *NEJM.* 2017; 377(23): 2228-39.
5. Guía de Práctica Clínica. Prevención, tamizaje y referencia oportuna de casos sospechosos de cáncer de mama en el primer nivel de atención, México; Secretaría de Salud. 2009.
6. Grajales EG, Cázares C, Díaz L, De-Alba V. Factores de riesgo para el cáncer de mama en México: Revisión de estudios en poblaciones mexicanas y Mexicoamericanas. *CES Salud Pública.* 2014; 1(5): 50-8.
7. Hernández DM, Villegas A, Apresa T. Detección de cáncer de mama en el IMSS: Asociación entre uso de servicio y estadio diagnóstico. *GAMO.* 2014; 13(4): 215-21.
8. Guía de Práctica Clínica Diagnóstico y Tratamiento del Cáncer de Mama en Segundo y Tercer Nivel de Atención, México; Secretaría de Salud, 2009.
9. Ünger-Saldaña K, Infante-Castañeda C. Delay of medical care for symptomatic breast cancer: A literature review. *Salud Publ Mex.* 2009; 51(2): s270-85.
10. Ünger-Saldaña K, Fitch-Picos K, Villarreal-Garza C. Breast cancer diagnostic delays among young Mexican women are associated with a lack of suspicion by health care providers at first presentation. *J Global Oncol.* 2019; (5): 1-12.
11. Knaul FM, Arreola H, Velázquez E, Dorantes J, Méndez O, Ávila B. El costo de la atención médica del cáncer mamario: El caso del Instituto Mexicano del Seguro Social. *Salud Publ Mex.* 2009; 51(2): 5286-95.
12. García-Quintanilla JF, González-Coronado SI, Gascón-Montante A, Hernández-Beltrán L, Barrera-López F, Lavín-Ayala R. Lesiones BIRADS 3 y 4 vistas por ultrasonido y no vistas por mastografía digital y tomosíntesis. *Anales de Radiología México.* 2016; 15(3): 205-13.
13. Mancillo ST, González C. Patrones mastográficos en mujeres mexicanas. *Anales de Radiología de México.* 2018; (17): 93-9.

14. Mexico National Autonomous University. Study Plan 2010 and Academic Programs of Medical Surgeon – Medicine Faculty. 2009 (Internet).
15. Mexico National Autonomous University – Superior Studies Faculty Iztacala. Medicine: Study Plan - Academic Program 1980, 2004 (minor update) [Internet].
16. Mexico National Autonomous University – Superior Studies Faculty Zaragoza. Medicine Academic Programs – Third year, medical clinics. 2013 (Internet).
17. Mexico National Autonomous University – Superior Studies Faculty Zaragoza. Medicine Academic Programs – Fourth year, medical clinics. 2013 (Internet).
18. Polytechnic National Institute – Superior Medicine School. Study Plan of Medical Midwife and Surgeon. 2012 (Internet).
19. Polytechnic National Institute – National Medicine and Homeopathic School. Study Plan of Medical Surgeon and Midwife. 2012 (Internet).
20. Polytechnic National Institute – National Medicine and Homeopathic School. Study Plan of Medical Surgeon and Homeopath. 2012 (Internet).
21. Mexican Social Security Institute. Operative program of family medicine specialization course. 2018
22. García J, Viniestra L. Evaluación de la aptitud clínica en residentes de medicina familiar. *Rev Med IMSS*. 2003; 41(6): 487-94.
23. Moreno A, Frías VO, Casas D, Rodríguez A. Aptitud clínica del médico familiar en los principales motivos de consulta y temas prioritarios de la atención primaria. *Arch Inv Mat Inf*. 2016; 8(3): 77-84.
24. García JA, Viniestra L. Evaluación de la aptitud clínica en residentes de medicina familiar. *Rev Med IMSS*. 2003; 41(6): 487-94.
25. García JA, Viniestra L. La formación de médicos familiares y el desarrollo de la aptitud clínica. *Rev Med IMSS*. 2004; 42(4): 309-20.