MINISTRY OF EDUCATION MINISTRY OF HEALTH
NATIONAL INSTITUTE OF HYGIENE AND EPIDEMIOLOGY

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CURRENT SITUATION AND EFFECTIVENESS OF INTERVENTION IMPROVE KNOWLEDGE, ATTITUDES, PRACTICES OF PREGNANT WOMEN AND PRENATAL SCREENING SERVICES IN BINH DUONG PROVINCE

SPECIALTY: PUBLIC HEALTH
CODE: 9 72 07 01

THESIS SUMMARY

HANOI - 2024

THIS RESEARCH WORK WAS COMPLETED AT
NATIONAL INSTITUTE OF HYGIENE AND EPIDEMIOLOGY

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The thesis is defended before the Institute-level Thesis Evaluation Council meeting at the national Institute of Hygiene and Epidemiology.

At 09:00, January 10th, 2024

The thesis can be found at :

1. National Library
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OF PUBLISHED PROJECTS
OF THE AUTHOR RELATED TO THE THESIS

1. Bui Minh Hien, Nguyen Khuong Duy, Vu Hai Ha, Vo Thi Kim Anh, Tran Van Huong (2023), Current status of pregnancy management and use of prenatal screening services in Binh Duong province in 2018 - 2022, Medical Magazine Vietnamese Studies, Volume 531, Number 1B, pp.382-386.

2. Bui Minh Hien, Nguyen Khuong Duy, Vu Hai Ha, Vo Thi Kim Anh, Tran Van Huong (2023), Current status of knowledge and practice on using prenatal screening services among pregnant women at health stations , Binh Duong province in 2018 - 2019, Vietnam Medical Journal, Volume 531, Number 1B, pp.393-397.

3. Bui Minh Hien, Nguyen Hong Chuong, Tran Van Huong, Vu Hai Ha, Lai Thi Minh, Vo Thi Kim Anh (2023), Effective intervention to improve knowledge, attitudes, and practices of women of childbearing age about screening Prenatal screening at the basis health level, Binh Duong province, 2019 - 2022, Vietnam Medical Journal, Volume 532, Number 2, pp. 150-155.

QUESTION

Improving population quality and ensuring human resources for social development is always one of the top goals of countries around the world. Today, many studies have found that the knowledge - attitude - practice of pregnant women plays an important role in prenatal screening. According to research in the United States - 2011 [80] , Thailand - 2009 [92] , Uranda - 2006 [72] recorded the rate of knowledge about prenatal screening as 60.0; 43.6 and 55.0. In Vietnam, this rate fluctuates through studies in Binh Thuan 20.1% (2019) [29] , Tra Vinh 73.8% (2019) [32] , Long An 73.8% (2019).) [49] have correct knowledge about prenatal screening. Correct practice through research by Pham Thu Huyen is 59.5% [29] , Nguyen Thi Phuong Tam is 75.5% [42] or 86.1% by Vo Ngoc Minh Thu [49] .

An important factor affecting prenatal screening rates is the ability to provide prenatal screening services. Since 2007, Vietnam has implemented the Prenatal and Newborn Screening Project and has now been implemented in 63 provinces and cities across the country, bringing great efficiency, helping to reduce the number of babies born. with birth defects, contributing to improving the quality of human resources. However, in reality, the organization and implementation of prenatal and newborn screening services still faces many difficulties, especially after 2017 when both central and local budgets were cut, providing free Prenatal and newborn screening service fees also decreased.

Binh Duong is a province in the Southeast region, located in the southern key economic region, with rapid development of industrial parks and attracting a large number of workers from other provinces to reside and work, including There are many female workers of childbearing age who need to use prenatal screening services. So we conducted this study with goals:

1. Describe the current state of knowledge, attitude, and practice of pregnant women about prenatal screening in Binh Duong province, 2018.

2. Describe the current situation of providing prenatal screening services and some influencing factors at the basis health level in Binh Duong province, 2018.

3. Evaluating the results of interventions to improve knowledge, attitudes, practices of pregnant women and the capacity to provide prenatal screening services at local health facilities in Binh Duong province, 2019 - 2022.

NEW CONTRIBUTIONS OF THE THESIS

- Scientific and practical: Increasing the proportion of pregnant women participating in the prenatal screening program contributes to healthy newborns, improves population quality, reduces social costs, medical budget burden for treatment. The study has practical value describing the current state of knowledge, attitudes, and practices of pregnant women about prenatal screening in Binh Duong province, 2018. Describes the current status of providing prenatal screening services and Some influencing factors at the basis health level in Binh Duong province, 2018. Evaluation of intervention results to improve knowledge, attitudes, practices of pregnant women and capacity to provide screening services antenatal

care at the local health facility in Binh Duong province, 2019 - 2022 using community consulting and communication methods. Research contributes to providing information and evidence for the process of building and perfecting the policy system and implementing interventions to improve reproductive health.

Research shows that the proportion of pregnant women with correct general knowledge about prenatal screening is 41.8%, a positive attitude about prenatal screening is 65.6%, and correct general practice about prenatal screening. is 32.1%. These results show that the need to improve knowledge and practice transformation on prenatal screening in pregnant women in Binh Duong province is still very high, and the task of taking care of the reproductive health of pregnant women in particular and pregnant women in particular is still very high. For women of childbearing age, childbearing is generally very difficult and takes a long time. In addition, the capacity to provide prenatal screening services at the basis health level is limited (not enough resources and facilities to perform prenatal screening) . Therefore, it is necessary to have flexible measures to organize communication activities to improve knowledge of women of childbearing age about prenatal screening and early detection management. pregnant women at the basis health level for care and encouragement to participate in prenatal screening. The research process was followed from identifying factors related to knowledge and practice of prenatal screening of pregnant women, then analyzing and recommending five main interventions.

The study has shown the effectiveness of a combined intervention between improving the capacity to provide prenatal screening services and communication interventions to increase knowledge and practice of prenatal screening. The general efficiency index for the knowledge section is 56.3%, the general efficiency index for the attitude section is 27.4% and the general efficiency index for the practice section is 77.6%. These results show that the intervention is worth implementing because of the clear impact on pregnant women's knowledge and practice of prenatal screening.

- Sustainability: The intervention model is accepted to participate in by pregnant women, medical staff, leaders of Health Centers, and leaders of Health Stations, and is feasible to replicate and sustainable. Meet the Government's goal of the Program to expand screening, diagnosis, and treatment of a number of prenatal and neonatal diseases and illnesses by 2030. Promoting the functions and tasks of the basis health level, contributing to increasing pregnant women's access to prenatal screening services right at the facility, ensuring equity in health care and minimizing costs of reproductive health care and prenatal screening. birth for women.

- Newness: Applying the direction of the management agency, the Provincial People's Committee, the Department of Health, and the District People's Committee to issue an implementation plan has greatly facilitated implementation and brought efficiency. results of the topic.

Determine the proportion of pregnant women with correct knowledge, positive attitudes, and correct practice of prenatal screening in Binh Duong province.

Identify factors affecting the provision of prenatal screening services at the basis health level, Binh Duong province.

We recognize the importance of organizing communication activities to improve knowledge, attitudes, and practices of pregnant women about prenatal screening and early detection management. pregnant women at the basis health level for care and encouragement to participate in prenatal screening.

The intervention model combines capacity building to provide prenatal screening services and socially adaptive communication intervention in prenatal screening for pregnant women (zalo, facebook, SMS...) and assessment. Evaluate the effectiveness of intervention using communication methods to improve knowledge, attitudes, and practices about prenatal screening.

The professional capacity of the basis medical level is extremely important in improving the capacity of birth defect screening services.

With the above interventions, maintaining post-intervention activities is very positive because the activities mainly rely on available local resources, especially having received consensus from leaders at all levels of the health sector. , the support and enthusiasm of those participating in the intervention program.

STRUCTURE OF THE THESIS

The thesis consists of 13 6 pages (not including cover pages, table of contents, lists, references, appendices) including: Introduction: 2 pages; Chapter 1: 41 pages; Chapter 2: 1 8 pages; Chapter 3: 48 pages; Chapter 4: 3 4 pages; Conclusion: 2 pages and recommendations: 2 pages. The thesis has 41 tables, 11 figures, charts and diagrams. References: 10 3 documents (Vietnamese: 52 ; English: 51).

Chapter 1. LITERATURE REVIEW

1.1 Concept and importance of prenatal screening

Prenatal screening (PS) is the use of techniques during pregnancy to detect the risk of fetal malformations [5] .

The importance of prenatal screening [21] : Pregnancy monitoring care; Determine the outcome of pregnancy; Plan for possible complications of childbirth; Plan for possible problems for your newborn; Guidance on deciding whether to terminate or continue pregnancy; Look for abnormalities that could affect future pregnancies.

1.2 Current status of knowledge, attitude, and practice of prenatal screening among women

In rural and mountainous areas, the proportion of pregnant women with correct knowledge, positive attitudes, and correct practice about prenatal screening is still low due to poor communication and pregnant women are not properly aware of prenatal screening. Regarding knowledge, research by Nguyen Thi Phuong Tam (2013) in Thu Thua district, Long An province with the rate of correct general

knowledge reaching 48.4% [41] , research by Tran Thi Mong Tuyen (2022) in the district Thu Thua, Long An province with the correct knowledge rate reaching 53.3% [58] . Regarding attitude, research by Nguyen Thi Phuong Tam (2013) in Thu Thua district with positive attitude reached 88.7% [41] , research by Hoang Thi Thu Hoai (2020) in Krong Buk district, Dak Lak province with Positive attitude reached nearly 90% (86 - 88% expressed positivity) [25] , research by Do Thi Nhien (2021) in Buon Ma Thuot city, Dak Lak province with positive attitude reached 81, 8% [37] . Regarding practice, research by Pham Thi Be Lan (2017) at Tra Vinh Obstetrics and Children's Hospital showed that 59% of pregnant women had prenatal screening performed [32] , research by Nguyen Thu Hien and colleagues (2018).) at Thai Nguyen Central Hospital, 89.55% of pregnant women had prenatal screening performed [24] .

1.3 Current status of providing prenatal screening services

In general, in Vietnam, the provision of prenatal screening services has not been applied to 100% of pregnant women and Resolution No. 21-NQ/TU on population work in the new situation is setting a target of 70%. Pregnant women should be screened for at least the four most common congenital diseases by 2030 [2] . Regarding the organization of providing PS services based on Decision No. 1807/QD-BYT dated April 21, 2020 of the Minister of Health promulgating Guidelines on technical expertise in screening and diagnosis , prenatal and neonatal treatment the provision of prenatal screening services [18] .

1.4 Several factors influence the provision of prenatal screening services

Some factors affecting the provision of prenatal screening services: Human resources to perform PS; PS service provision facilities; Medical equipment providing PS services; Communication work on PS; Management of pregnant women at medical levels; PS information system.

1.5 Some interventions to improve women's knowledge, attitudes and practices and the ability to provide prenatal screening services

Research by Smith SK et al (2018) in Australia, improved knowledge about prenatal screening in pregnant women less than 13 weeks pregnant with low education level. Supportive communication materials for women with low education levels are designed with simple language, bright colors, a glossary of medical terms, vivid visual illustrations, and medical diagrams. Simple, helps women make informed health decisions by clearly articulating the decision, providing information about potential benefits and risks. The results showed that the majority of pregnant women found this booklet to be very clearly presented (76%) and 23.8% very informative. Overall, pregnant women's adequate knowledge of prenatal screening and non-invasive prenatal tests improved after exposure to decision support communication materials increasing from 4% to 69% [99] .

Chapter 2. RESEARCH SUBJECTS AND METHODS

2.1 Subjects, location, time of research

Pregnant women aged 18 years or older permanently or temporarily residing for 1 year or more in Binh Duong province at the time of the study.

Medical staff are assigned to do prenatal screening at 9 Health Centers and 91 Health Stations in Binh Duong province.

Facilities, medical equipment, essential drugs, books and reports at 9 Health Centers and 91 Health Stations provide prenatal screening services.

Time : Phase 1: cross-sectional descriptive study from August 2018 to December 2018. Phase 2: intervention research from March 2019 to October 2022.

The cross-sectional survey locations were 91 health stations and 9 district health centers belonging to 09 district-level administrative units, including: Thu Dau Mot city, Di An city, Thuan An city , Tan Uyen city, Ben Cat town and Bau Bang districts, Bac Tan Uyen district, Dau Tieng district, Phu Giao district.

Intervention research location: 91 Health Station, Binh Duong province.

2.2 Research Methods

2.2.1 Descriptive, cross-sectional study

2.2.1.1 Sample size to survey knowledge, attitudes, and practices of pregnant women

Sample size is calculated according to the formula to estimate a proportion, sample size n.

$$n = Z^2_{1-\alpha/2} \frac{px(1-p)}{d^2} x\ DE$$

In which: $Z_{1-\alpha/2} = 1.96$ (with 95% confidence); with statistical significance level $\alpha=0.05$; p: desired value of the ratio. According to research by Nguyen Thi Phuong Tam (2013) in Thu Thua district, Long An province, the rate of correct practice of pregnant women regarding prenatal screening is 75.0% [42] . choose p= 0.75; d = 0.05 is the selection error; design coefficient DE = 2; The rate of consent to participate in the study is estimated to be 80%. The minimum sample size is n=723 pregnant women. In fact, we selected 809 pregnant women to participate in the study.

2.2.1.2 Sample size and sampling techniques describe the current situation of providing prenatal screening services

- Select all 91/91 Health Stations
- Select all 9/9 district health centers

2.2.1.3 Sample size to study some influencing factors

In-depth interviews: 1 Leader of the Department of Health; 1 - Leader of the Provincial Reproductive Health Care Center.

Group discussion: Health Center leadership group discussion (9 people); Discussion with Health Station leadership group (9 people).

2.2.1.4 Research variables

The data collection tool in the study is a structured questionnaire designed based on Circular No. 34/2016/TT-BYT stipulating the screening process to detect, treat, and handle abnormalities. , fetal malformations and some related studies [8] .

Knowledge about prenatal screening includes 14 contents [8] , [18] : (1) Prevention before pregnancy; (2) Prophylaxis during pregnancy; (3) Purpose of prenatal screening; (4) Content of prenatal screening; (5) Subjects who need to undergo prenatal screening; (6) Purpose of ultrasound during pregnancy; (7) Purpose of Double test of pregnancy; (8) Time to perform Double test; (9) Accurate Double Test testing time; (10) Purpose of Triple test; (11) Time to perform Triple test; (12) The most accurate time to test Triple test; (13) Reasons for needing amniocentesis; (14) Prenatal tests for DPLT from mother to fetus. The cutoff point of 50% was chosen to evaluate whether knowledge was passed or failed. The total score of general knowledge about prenatal screening is 47 points. General knowledge score is achieved when the total score is ≥ 24 points, general knowledge score is not achieved when the total score is < 24 points.

Attitudes about prenatal screening are scored based on 13 items assessing the level of necessity: (1) Performing prenatal screening; (2) Communication and dissemination of knowledge; (3) Periodic prenatal check-ups; (4) Periodic ultrasound; (5) Double test does not affect the health of mother and baby; (6) Double test; (7) Triple test does not affect the health of mother and baby; (8) Triple test; (9) Prenatal HIV testing during pregnancy; (10) Prenatal syphilis testing during pregnancy; (11) Prenatal Rubella testing during pregnancy; (12) Prenatal testing for hepatitis B during pregnancy; (13) Prenatal screening, diagnosis and treatment are performed voluntarily. The total score of general attitudes about prenatal screening is 13 points. The general attitude score is achieved when the total score is 13 points, the general attitude score is not achieved when the total score is < 13 points.

The group of practice variables on prenatal screening includes 4 contents: (1) Prevention before pregnancy; (2) During pregnancy; (3) Practice prenatal screening; (4) Screening time. The cutoff point of 50% was chosen to evaluate whether the practice passed or failed. The total score for general practice of prenatal screening is 21 points. The general practice score is passed when the total score is ≥ 11 points, the general practice score is not achieved when the total score is < 11 points.

2.2.2 Controlled community intervention study

The study sample size was calculated according to the following formula:

$$n = \frac{\left\{Z_{1-\alpha/2}\sqrt{2\bar{p}(1-\bar{p})} + Z_{1-\beta}\sqrt{p_1(1-p_1)+p_2(1-p_2)}\right\}^2}{(p_1-p_2)^2}$$

In which: n is the minimum sample size for each group (before intervention and after intervention); α: statistical significance level with 95% confidence level, α = 0.05; β: probability of making a type II error, choose β = 0.2; p_1 : proportion of pregnant women with correct practice of prenatal screening before intervention, choose p_1 = 0.57 [32] ; p_2 : estimated proportion of pregnant women with correct practice of prenatal screening after 1 year of intervention, choose p_2 = 0.7; DE: design coefficient, choose DE = 2. The minimum sample size in each group of the intervention is n = 430. Actually, 455 pregnant women were selected before the intervention and after the intervention. Select a system sample of 5 women who came for prenatal check-ups at each health station to meet the inclusion criteria.

2.2.3 Intervention content

Implement intervention activities: (1) Build a document system to manage prenatal screening in Binh Duong province; (2) Enhance service delivery capacity; (3) Deploy an adaptive social communication model in prenatal care for mothers (zalo, facebook, SMS); (4) Organize maternal counseling at health stations and by phone (replacing the home visiting model); (5) Community supervision.

2.3 Processing and analyzing data

Data were imported using Epidata 3.0, cleaned and analyzed using Stata/IC14.0 software. Describe the frequency and percentage for qualitative variables (demographic variable group, health behavior variable group, knowledge, attitude and practice variables about prenatal screening, group of variables on the current status of providing prenatal screening services). Analyze some factors related to prenatal screening practice using χ^2 , OR test. Compare results before - after based on the method of comparing 2 proportions, using the $\chi^{2\,test}$. Evaluate intervention effectiveness through the effectiveness index (CSHQ): CSHQ = $|p_1 - p_2|$.

Interviews and group discussions were recorded, transcribed, coded and analyzed by theme. Appropriate content will be cited to meet the research objectives.

2.4 Research ethics

The study was approved by the Ethics Council of the Central Institute of Hygiene and Epidemiology, approved by the Department of Health, 9 Health Centers and 91 Health Stations in Binh Duong province. Research subjects are provided with full information and consent is obtained before participating, their personal information is kept confidential and other rights are guaranteed.

Chapter 3. RESEARCH RESULTS

3.1 Current status of knowledge, attitude, and practice of pregnant women about prenatal screening in Binh Duong province, 2018

3.1.1 Correct knowledge about prenatal screening for pregnant women

Correct knowledge of pregnant women about prenatal screening (n=809)

Knowledge about prenatal screening	Quantity	Ratio (%)
Purpose of prenatal screening	483	59.7
Content of prenatal screening	316	39.1
Subjects need to undergo prenatal screening	373	46.1
Purpose of ultrasound	473	58.5
Purpose of testing Double test	415	51.3
Time for Double test: First trimester of pregnancy	502	62.1
Double test gives the most accurate results: from 11-13 weeks 6 days	515	63.7
The purpose of the Triple test test	371	45.9
Time for Triple test: Second trimester of pregnancy	446	55.1
Triple test gives the most accurate results: from 16-18 weeks	361	44.6
Reasons for performing amniocentesis	251	31.0
Testing to prevent transmission of diseases from mother to fetus	590	72.9
General knowledge correct	185	22.9

The proportion of pregnant women with correct general knowledge about prenatal screening is quite low at 22.9%. Most pregnant women's correct knowledge is lower than 50% on topics including: subjects who need to undergo prenatal screening with 46.1%, purpose of Triple test with 45.9%, timing Triple test score gave the most accurate results with 44.6%, prenatal screening content with 39.1%, reason for performing amniocentesis with 31.0%.

3.1.2 Correct attitudes about prenatal screening of pregnant women

Correct attitudes of pregnant women about prenatal screening (n=809)

Attitude content	Quantity	Ratio (%)
Prenatal screening during pregnancy is necessary	658	81.3
Media dissemination of knowledge about PS is necessary	674	83.3
Regular prenatal checkups are necessary	672	83.1
Periodic ultrasounds are necessary	682	84.3
Double test does not affect the health of mother and baby	639	79.0
Double test is necessary	621	76.8
Triple test does not affect the health of mother and baby	614	75.9
Triple test is necessary	616	76.1
Prenatal HIV testing during pregnancy is necessary	670	82.8

Attitude content	Quantity	Ratio (%)
Prenatal syphilis testing during pregnancy is necessary	659	81.5
Prenatal Rubella testing during pregnancy is necessary	655	81.0
Prenatal testing for hepatitis B during pregnancy is necessary	671	82.9
Prenatal screening, diagnosis and treatment are performed voluntarily	672	83.1
General positive attitude	531	65.6

The proportion of pregnant women with a positive attitude about prenatal screening is 65.6%. Among them, the majority of pregnant women have a positive attitude about realizing that periodic ultrasound is necessary with 84.3%, followed by a positive attitude about realizing that periodic prenatal examination is necessary with 84.3%. 83.1% and found that screening, diagnosis and prenatal treatment were performed voluntarily in 83.1%.

3.1.3 Correct practice of prenatal screening of pregnant women

Correct practice of prenatal screening among pregnant women (n=809)

Practice content		Quantity	Ratio (%)
Pregnancy examination	< 3 times	116	14.3
	≥ 3 times	693	85.7
Pregnancy examination period	During the first 3 months of pregnancy	793	98.0
	During the second trimester of pregnancy	748	92.5
	During the last 3 months of pregnancy	687	84.9
	Full prenatal examination at 3 stages of pregnancy	675	83.4
Supersonic	< 3 times	127	15.7
	≥ 3 times	682	84.3
Ultrasound phase	During the first 3 months of pregnancy	794	98.2
	During the second trimester of pregnancy	732	90.5
	During the last 3 months of pregnancy	669	82.7
	Full ultrasound at 3 stages of pregnancy	656	81.1
Preventive testing	Blood count test	695	85.9
	Blood sugar test	655	81.0
	Rh blood group test	533	65.9
	Double test	571	70.6
	Triple test	431	53.3
	HIV/AIDS testing	665	82.2

Practice content		Quantity	Ratio (%)
	Hepatitis B testing	619	76.5
	Complete all tests	330	40.8
Correct general practice		260	32.1

The proportion of pregnant women with correct general practice in using prenatal screening services is quite low at 32.1%. Of these, only 40.8% of pregnant women complete all prenatal screening tests.

3.1.4 Some factors related to the practice of prenatal screening

Table 3.17 Some factors related to correct general practice of prenatal screening of pregnant women through multivariate regression analysis

Related factors	OR_{hc}	95% CI	p_{hc}
General knowledge correct	2.97	1.57 – 3.99	< 0.001
Overall positive attitude	3.23	1.45 – 3.53	< 0.001
Do not expose yourself to cigarette smoke	1.47	1.09 – 1.98	0.012
Attended prenatal classes	2.28	1.69 – 3.07	< 0.001
There are regular prenatal checks	1.93	1.25 – 3.01	0.003
Have regular ultrasounds	1.74	1.16 – 2.60	0.007
Have health insurance	1.82	1.01 – 3.26	0.045
Access PS information from health workers	2.49	1.84 – 3.36	< 0.001

p_{pc}: adjusted p value OR_{hc}: adjusted OR

After controlling for factors using multivariate models, some factors were related to prenatal screening practice ($p < 0.05$): knowledge about birth control, attitude about birth control, exposure to cigarette smoke , participating in prenatal classes, regular prenatal checks, regular ultrasounds, health insurance, accessing prenatal screening information from health workers.

The rate of correct practice increased in the group of pregnant women who had correct general knowledge, a positive general attitude, were not exposed to cigarette smoke, attended prenatal classes, had regular prenatal checkups, and had regular ultrasounds. , have health insurance, and have access to prenatal screening information from health workers.

On this basis and based on the resources providing prenatal screening services at the basis health level, we choose the following factors for intervention: access to prenatal screening information from health workers, participation Attend prenatal classes, regular prenatal checkups, regular ultrasounds, health insurance.

3.2 Current status of providing prenatal screening services and some influencing factors at the basis health level in Binh Duong province, 2018

3.2.1 Current status of resources to meet the quality of medical examination and treatment services covered by health insurance at the Medical Examination Department of the District Health Center

Table 3.20 Training on providing prenatal screening services

Healthcare staff	Training at Health Center		Training at Clinics	
	Quantity	Ratio (%)	Quantity	Ratio (%)
Doctor	7	58.3	5	6.3
Medico	3	50.0	13	6.7
Nursing	first	25.0	3	16.7
Midwives	20	80.0	60	69.8
Technician lab	0	0	0	0
Total trained staff	thirty first	54.3	81	20.8

Regarding training to provide prenatal screening services, there are 31 staff trained at health centers (accounting for 54.3%), 81 staff trained at health stations (accounting for 20.8%). Among trained staff at Health Centers, the number of trained midwives accounts for the highest proportion (80%), followed by doctors (58.3%), and physicians (50%). Among trained staff at health stations, the number of trained midwives accounts for the highest proportion (69.8%). The medical examination force is not trained at Health Centers and health stations.

Table 3.21 Providing prenatal screening services at centers and health stations

Room	Health Center		Clinics	
	Quantity	Ratio (%)	Quantity	Ratio (%)
Pregnancy clinic	9	100	85	93.4
Gynecological clinic	9	100	eighty six	94.5
Family Planning Technical Department	9	100	eighty seven	95.6
Birth room	8	88.9	88	96.7
Maternity room	7	77.8	sixty seven	73.6
Communication room/corner for reproductive health consulting	6	66.7	75	82.4
Full of rooms	8	88.9	63	69.2

There are 8 Health Centers with full rooms (88.9%). In particular, prenatal clinics, gynecological clinics and family planning clinics are located in 100% of health centers. At Health Station, there are 63 Health Station with full rooms (69.2%). Among them, the rooms that are provided in large numbers at Health Station include delivery rooms (96.7%), family planning technical rooms (95.6%), gynecological clinics (94.5%), and prenatal clinics (93, 4%). In particular, at Health Station there are additional communication rooms/corners for reproductive health consultation (82.4%).

3.2.2 Some factors affecting resources to meet the quality of medical examination and treatment services covered by health insurance at the Medical Examination Department of the District Health Center

Characteristics of pregnant women: Family finances are low, so pregnant women often/rarely do not go for prenatal checkups or ultrasounds; Lack of knowledge about prenatal screening.

Human resources to provide prenatal screening services: Lack of human resources and weak medical staff qualifications have not created trust with the people; Education and training in basic reproductive health care skills is not high; Regimes and policies to remunerate, motivate and encourage medical staff to provide maternity care at health stations still have many shortcomings.

Facilities and medical equipment of the basis medical level: Most Health Stations have not yet arranged separate working rooms, they must be integrated into specialized professional rooms; Lack of equipment for reproductive health care.

Management of essential reproductive health care services: Some book forms are not correct and need to be recorded according to instructions; The network of collaborators has not been proactive in early detection of pregnant women for timely care and management; The prenatal screening system has not been invested properly and operates sporadically.

Communication to improve knowledge, attitudes, and practices about prenatal screening: Not flexible in organizing communication activities.

From the results of in-depth interviews and group discussions mentioned above, it is shown that systemic factors affect the capacity to provide prenatal screening services and pregnant women's knowledge, attitudes, and practices about prenatal screening. include: Inability to access and update resources on prenatal screening; There are no appropriate effective tools and solutions in providing information, training and regular supervision; Passivity in carrying out prenatal screening activities at the basis health level; Training policies of medical facilities; Facilities and medical equipment have not been invested in to serve prenatal screening.

3.3 Evaluating the results of intervention in the capacity to provide prenatal screening services and improving knowledge, attitudes, and practices of pregnant women and at local health facilities in Binh Duong province, 2019 - 2022

3.3.1 Results of intervention to improve the capacity to provide prenatal screening services at the basis health level, Binh Duong province

Table 3. 27 Results of the number of health workers trained in providing prenatal screening services at health centers and health stations before and after intervention

Unit	Before intervention		After intervention		p
	Size sample	Ratio (%)	Size sample	Ratio (%)	
District Health Center	57	54.3	82	65.8	0.17
Health station	390	20.8	476	28.3	0.011

Through the table above, we can see that after the intervention, the proportion of trained medical staff at health centers increased from 54.3% to 65.8%, however this difference is not statistically significant (p = 0.17).). The proportion of medical staff trained after intervention at the Health Station increased from 20.8% to 28.3% and this difference was statistically significant (p=0.011).

Table 3.28 Results of providing prenatal screening services at centers and health stations before and after intervention

Room	District Health Center (n = 9)			Health Station (n = 91)		
	Before	After	Compare after/ before	Before	After	p
Pregnancy clinic	100	100	Keep stable	93.4	95.6	>0.05
Gynecological clinic	100	100	Keep stable	94.5	94.5	>0.05
Communication room/corner for reproductive health consulting	66.7	88.9	Increase	82.4	93.4	>0.05
Full of rooms	7(77.8)	8(88.9)	Increase	69.2	76.9	>0.05

Regarding the results of providing prenatal screening services, at the Health Center after the intervention, the number of specialized rooms mostly remained the same, with a slight increase in the proportion of rooms for pregnant women (77.8% to 88.9%). At Health Station, specialized rooms increased after the intervention, the proportion of Health Station with full rooms increased from 69.2% to 76.9%. However, these differences are not statistically significant (p > 0.05).

3.3.2 Results of intervention to improve knowledge, attitude, and practice of prenatal screening among pregnant women in Binh Duong province

Table 3.34 Characteristics of pregnant women before and after intervention

Student characteristics		Before intervention (n = 455)		After intervention (n = 455)		p
		SL	%	SL	%	
Nation	Kinh	436	95.9	438	96.2	> 0.05

	Other	19	4.1	17	3.8	
Job	Farmer	23	5.1	25	5.5	> 0.05
	Worker	259	56.9	256	56.3	
	Civil servants	48	10.5	52	11.4	
	Business	29	6.4	thirty first	6.8	
	Housewife	eighty six	18.9	83	18.2	
	Other	ten	2,2	8	1.8	
Academic level	Below elementary school	11	2,4	13	2.9	> 0.05
	Elementary	43	9.5	47	10.3	
	Secondary school	172	37.8	168	36.9	
	Hight school	151	33.2	148	32.5	
	≥ Intermediate level	78	17.1	79	17.4	

Surveying 455 pregnant women before the intervention and 455 pregnant women after the intervention, the results showed that the characteristics of ethnicity, occupation, and educational level did not have statistically significant differences (p > 0.05).

Table 3.35 Effectiveness of intervention to improve knowledge about prenatal screening among pregnant women at the basis health level, Binh Duong province

Knowledge about prenatal screening	**before (n=455)**		**after (n=455)**		**p**	**ratio (%)**
	SL	**%**	**SL**	**%**		
Prevention before pregnancy	172	37.8	324	71.2	<0.001	88.4
Prophylaxis during pregnancy	177	38.9	338	74.3	<0.001	91.0
Purpose of prenatal screening	316	69.5	392	86.2	<0.001	24.1
Content of prenatal screening	362	79.6	395	86.8	0.003	9.1
Risk subjects	228	50.1	329	72.3	<0.001	44.3
Purpose of ultrasound screening	211	46.4	341	74.9	<0.001	61.6
Purpose of testing Double test	217	47.7	351	77.1	<0.001	61.8
Time for Double test: First 3 months	172	37.8	325	71.4	<0.001	89.0
Double test is most accurate: pregnancy from 11-13 weeks 6 days	149	32.7	289	63.5	<0.001	94.0
Purpose of Triple test	216	47.5	351	77.1	<0.001	62.5
Time for Triple test: Second trimester	160	35.2	303	66.6	<0.001	89.4

Knowledge about prenatal screening	before (n=455)		after (n=455)		p	ratio (%)
	SL	%	SL	%		
Prevention before pregnancy	172	37.8	324	71.2	<0.001	88.4
Triple test is most accurate: When the pregnancy is between 16 - 18 weeks	153	33.6	282	62.0	<0.001	84.3
Reasons to induce vomiting	219	48.1	315	69.2	<0.001	43.8
Preventive testing	313	68.8	348	76.5	0.009	11.2
Correct general knowledge (≥ 7 points)	215	47.3	336	73.8	<0.001	56.3

The proportion of pregnant women with correct knowledge about prenatal screening increased from 47.3% to 73.8% ($p < 0.001$; eff = 56.3%). The proportion of pregnant women with correct knowledge about the contents of prenatal screening increased by over 80%, including: the purpose of prenatal screening increased from 69.5% to 86.2%, the content of prenatal screening increased from 79.6% to 86.8%.

Table 3.36 Effectiveness of intervention to improve attitudes about prenatal screening among pregnant women at the basis health level, Binh Duong province

Attitudes about prenatal screening	before (n=455)		after (n=455)		p	ratio (%)
	SL	%	SL	%		
Prenatal screening during pregnancy is necessary	335	73.7	375	82.4	0.001	11.9
Communication about prenatal screening is necessary	342	75.2	390	85.7	<0.001	14.0
Regular prenatal checkups are necessary	341	74.9	371	81.5	0.016	8.8
Periodic ultrasounds are necessary	360	79.2	389	85.5	0.012	8.1
Double test does not affect the health of mother and baby	319	70.2	377	82.9	<0.001	18.2
Double test is necessary	358	78.7	389	85.5	0.007	8.7
Triple test does not affect the health of mother and baby	315	69.2	369	81.1	<0.001	17.1
Triple test is necessary	356	78.3	388	85.3	0.006	9.0
Prenatal HIV testing during pregnancy is necessary	388	85.2	412	90.5	0.015	6.2
Consider experience Giang roof When carry pregnancy To be necessary	374	82.3	410	90.1	0.001	9.6
Rubella testing during pregnancy is necessary	316	69.4	371	81.5	<0.001	17.4

Attitudes about prenatal screening	before (n=455)		after (n=455)		p	ratio (%)
	SL	%	SL	%		
Testing for hepatitis B during pregnancy is necessary	339	74.4	374	82.2	0.005	10.3
Prenatal screening, diagnosis and treatment are done voluntarily	390	85.7	419	92.1	0.002	7.4
Positive attitude (scored 13 points)	288	63.2	367	80.7	<0.001	27.4

The proportion of pregnant women with positive attitudes about prenatal screening increased from 63.2% to 80.7% (p < 0.001; eff = 27.4%).

Table 3.37 Effectiveness of intervention to improve prenatal screening practices of pregnant women at the basis health level, Binh Duong province

Practice of prenatal screening		before (n=455)		after (n=455)		p	ratio (%)
		SL	%	SL	%		
Prevention before pregnancy	Pre-marital health check	124	27.3	238	52.3	<0.001	91.9
	Health check before pregnancy	157	34.5	304	66.8	<0.001	93.6
	Supplement folic acid	193	42.4	304	66.8	<0.001	57.5
	Get certain vaccines	145	31.9	287	63.1	<0.001	97.9
	general knowledge	155	34.1	307	67.5	<0.001	98.1
In pregnancy period	Regular prenatal check-ups	203	44.6	375	82.4	<0.001	84.7
	Periodic ultrasound	168	36.9	332	73.0	<0.001	97.6
	Supplement folic acid	126	27.7	249	54.7	<0.001	97.6
	Vaccination with certain types of vaccines	146	32.1	247	54.3	<0.001	69.2
	Prevent infection	123	27.0	232	51.0	<0.001	88.6
	General practice	153	33.6	298	65.5	<0.001	94.8
Practice prenatal screening	Ultrasound screening	342	75.2	379	83.3	0.003	10.8
	Blood count test	227	49.9	318	69.9	<0.001	40.1
	Blood sugar test	228	50.1	339	74.5	<0.001	48.7
	Rh blood group test	173	38.0	256	56.3	<0.001	48.0
	Double test	197	43.3	338	74.3	<0.001	71.6
	Triple test	175	38.5	324	71.2	<0.001	85.1
	HIV/AIDS testing	224	49.2	376	82.6	<0.001	67.9
	Syphilis test	209	45.9	357	78.5	<0.001	70.8
	Rubella testing	208	45.7	328	72.1	<0.001	57.7
	Hepatitis B testing	221	48.6	347	76.3	<0.001	57.0
	General practice	220	48.4	336	73.8	<0.001	52.7
Screening time	When the pregnancy is 11 - 14 weeks	149	32.7	295	64.8	<0.001	98.0

Practice of prenatal screening		before (n=455)		after (n=455)		p	ratio (%)
		SL	%	SL	%		
	When the pregnancy is 20 - 24 weeks	132	29.0	261	57.4	<0.001	97.7
Correct general practice (≥ 11 points)		174	38.2	309	67.9	<0.001	77.6

The results showed that the proportion of pregnant women with correct prenatal screening practices increased from 38.2% to 67.9% ($p < 0.05$; ratio = 77.6%). In particular, the proportion of pregnant women practicing proper prevention before pregnancy increased from 34.1% to 67.5%, and practicing during pregnancy increased from 33.6% to 65.5%. , screening tests increased from 48.4% to 73.8%.

Chapter 4. DISCUSSION

4.1 Current status of knowledge, attitude, and practice of pregnant women about prenatal screening in Binh Duong province, 2018

4.1.1 Correct knowledge about prenatal screening for pregnant women

Research on 809 pregnant women in Binh Duong province, the results showed that the proportion of pregnant women with correct knowledge about prenatal screening was 22.9%. Similar to the results of research by Pham Thu Huyen (2018) at the Reproductive Health Care Center of Binh Thuan province, the proportion of pregnant women with correct knowledge about prenatal screening in the first trimester of pregnancy is 20.1. % [29] . Our research results are lower than the results of Tran Van Tri (2012) in 05 districts of Ho Chi Minh City with the correct general knowledge rate of 38.0% [54] , Nguyen's research. Thi Phuong Tam (2013) in Thu Thua district, Long An province with the correct general knowledge rate of 48.4% [41] , research by Pham Le Sy Cuong (2016) at 2 prenatal diagnosis centers in Vietnam Men with a correct general knowledge rate of 63% [19] , research by Pham Thi Be Lan (2019) at Tra Vinh Obstetrics and Children's Hospital with a correct knowledge rate of 73.8% [32] , research by Vo Ngoc Minh Thu (2019) at the Center for Disease Control of Long An province with a correct knowledge rate of 73.8% [49] , research by Tran Thi Mong Tuyen and colleagues (2022) in Thu Thua district, province Long An with the rate of correct knowledge reaching 53.3% [58] , research by Phi Vinh Bao and colleagues (2023) at Thu Duc City Hospital with the rate of pregnant women with correct general knowledge about screening Prenatal screening is 60.8% [3] , Thailand - 2009 with 43.6% [92] , United States - 2011 with 60.0% [80] , Uranda - 2006 with 55.0% [72] .

4.1.2 Correct attitudes about prenatal screening of pregnant women

The proportion of pregnant women with a positive attitude about prenatal screening is 65.6%. Among them, the majority of pregnant women have a positive attitude about realizing that periodic ultrasound is necessary with 84.3%, followed by a positive attitude about realizing that periodic prenatal examination is necessary with 84.3%. 83.1% and found that screening, diagnosis and prenatal

treatment were performed voluntarily in 83.1%. This result is lower than the study of Nguyen Thi Phuong Tam (2013) in Thu Thua district with a positive attitude reaching 88.7% [41] , the study of Pham Le Sy Cuong (2016) at 2 diagnostic centers. predicting birth in Vietnam with a correct general knowledge rate of 78% [19] , research by Hoang Thi Thu Hoai (2020) in Krong Buk district, Dak Lak province with a positive attitude reaching nearly 90% (86 - 88 % expressing positivity) [25] , research by Do Thi Nhien (2021) in Buon Ma Thuot city, Dak Lak province with a positive attitude reaching 81.8% [37] , research by Pop-Tudose ME et al (2018) in Romania with a positive attitude reaching 78.9% [91] . The differences may originate from cultural beliefs, local regions and the psychology of pregnant women in different countries and regions. The rate of pregnant women with a positive attitude about prenatal screening in Binh Duong is not high. The reason may be that in many cases the initial diagnosis results are inaccurate, anxiety increases the level of psychological pressure of pregnant women.

4.1.3 Correct practice of prenatal screening of pregnant women

The proportion of pregnant women with correct general practice of prenatal screening in our study was quite low at 32.1%. In Pham Thu Huyen's research, the majority of subjects wondered whether they should have prenatal screening (59.5%). However, after receiving advice from medical staff about prenatal screening, the number of pregnant women accepting prenatal screening increased from 34.2% to 85.1%. Prenatal screening of pregnant women increased from 31.9% to 80.7% [29] . There is a big difference with Vo Ngoc Minh Thu's study (86.1%) [49] . Nguyen Thi Phuong Tam noted that correct general practice accounts for 75.5%, the number of prenatal check-ups from 3 or more accounts for 95.3%; The number of ultrasounds performed 2 times or more accounts for 99.1%, or the number of ultrasounds performed 1 and 2 times is 82.5% and 89.1%, respectively, a high rate [42] . In our study, we also recorded a high rate of 3 or more prenatal examinations at 85.7%; 3 or more ultrasounds accounted for 84.3%, showing the interest in prenatal examinations and fetal ultrasound among pregnant women through research. This shows that local pregnancy care management is quite good, but the practice rate is not high, so more attention is needed.

4.1.4 Some factors related to the practice of prenatal screening

Our study results show that knowledge and attitudes about prenatal screening are related to practice of prenatal screening. Specifically, the more knowledge and correct attitudes pregnant women have, the higher the rate of correct practice will be. Research by Pham Thu Huyen shows that the group of pregnant women with correct knowledge about prenatal screening has correct behavior about prenatal screening 5.0 times more than the group of pregnant women with incorrect knowledge about prenatal screening. prenatal filtration. The group of pregnant women with the right attitude about prenatal screening has 15.1 times more correct behavior about prenatal screening than the group of pregnant women with the wrong attitude about prenatal screening [29] . Research by Nguyen Thi Phuong

Tam showed that pregnant women with correct knowledge about prenatal screening had a rate of correct practice 1.10 times higher than pregnant women with incorrect knowledge ($p < 0.001$) [42] .

4.2 Current status of providing prenatal screening services and some influencing factors at the basis health level in Binh Duong province, 2018

4.2.1 Current status of providing prenatal screening services at the basis health level

Through research results and a survey of 91 Health Stations, it shows that the total number of human resources is 390 people, the largest number of doctors (150/390) and no laboratory technicians, doctors with a specialty in Obstetrics and Pediatrics are 83.2%; Survey of 9 Health Centers shows that the total workforce is 57 people, midwives have the largest number (25/57), doctors (12/57), 100% of doctors have obstetrics and pediatrics specialties. Research by Nguyen Huu Thang and colleagues (2015) in Binh Luc district, Ha Nam province, results also showed that 84.2% of commune health stations have enough staff, 68.4% of commune health stations have doctors, 6/19 commune health stations have no doctors [44] . Research by Dam Thi Tuyet and colleagues (2020) at Tan Uyen District Health Center, Lai Chau Province, according to Circular No. 37/2016/TT-BYT, the number of human resources of the Health Center is assigned based on location. employment of the unit [10] , however, the human resources of the Health Center are not guaranteed according to the job position because there is still a shortage of doctors, nurses, and an excess of physicians and pharmacists [59] . From there, it shows that the Department of Health of Binh Duong province needs to have remuneration policies to attract and maintain staff, and at the same time have a plan to allocate human resources appropriately to contribute to good response to health care work. people's health at the basis health level.

4.2.2 Some factors affecting the provision of prenatal screening services

Lack of human resources and poor medical staff qualifications were also identified as one of the barriers in implementing medical services at the facility. Each Health Station only has 6 - 12 medical staff, so the work pressure is huge. In addition, most district health facilities deploy prenatal screening techniques, mainly ultrasound and normal blood count testing. In Binh Duong province, district, town, and city health centers and health stations only perform ultrasound to check the fetus, and do not provide blood testing services for prenatal pregnant women or newborns. . Pregnant women who want to have prenatal screening tests must go to hospitals. The prenatal screening program needs attention at all levels and is built into a routine system in pregnancy care. According to research by Pham Le Sy Cuong (2016) at 2 prenatal diagnosis centers, the results showed that only 3% of pregnant women were consulted at the commune health station, and 2% of pregnant women were consulted. by population collaborators. The reason is that health workers at health stations and population collaborators have insufficient knowledge and do not pay attention to the issue of prenatal screening, as well as

the health station's reputation for pregnant women [19]. .

4.3 Evaluating the results of interventions to improve knowledge, attitudes, practices of pregnant women and the capacity to provide prenatal screening services at local health facilities in Binh Duong province, 2019 - 2022

4.3.1 Intervention evaluation Improve the capacity to provide prenatal screening services at public health facilities in Binh Duong province

Regarding training in providing prenatal screening services, the proportion of medical staff trained at Health Centers increased from 54.3% to 65.8%, the difference is not statistically significant. ($p > 0.05$), Health Stations increased from 20.8% to 28.3% ($p < 0.05$). Regarding facilities providing prenatal screening services, the number of rooms at Health Centers increased from 77.8% to 88.9%, and Health Stations increased from 69.2% to 76.9%. %. However, these differences are not statistically significant ($p>0.05$). Regarding clean water supply and environmental sanitation, meeting all 6 criteria at Health Centers increased from 88.9% to 100% ($p < 0.05$), Health Stations increased from 59.3%. up 82.4% ($p < 0.05$). Regarding essential medical equipment to provide prenatal screening services, Health Centers have all 9 items, increasing from 22.2% to 44.4%, Health Stations have all 8 items, increasing from 72% to 82% ($p < 0.05$). Regarding the essential reproductive health care services provided, Health Centers that fully implement the techniques increased from 0% to 3%, Health Stations that fully implement the techniques increased from 26%. .4% to 56.0%.

4.3.2 Intervention results to improve knowledge, attitudes, and practices of pregnant women in Binh Duong province

Effectiveness of intervention to improve knowledge about reproductive health: Before intervention, the proportion of pregnant women with correct general knowledge about prenatal screening in our study was 47.3%. This result is lower than the research of Nguyen Thi Phuong Tam (2013) in Thu Thua district, Long An province with the rate of correct general knowledge reaching 48.4% [41] , the research of Tran Thi Mong Tuyen and colleagues. (2022) in Thu Thua district, Long An province with the correct knowledge rate reaching 53.3% [58] . Our research shows that most pregnant women have less access to information about full prenatal screening through media such as medical staff, radio, and television. In rural and mountainous areas, the proportion of pregnant women with correct knowledge about prenatal screening is still low due to poor communication and pregnant women are not properly aware of prenatal screening. Research by Pham Thu Huyen and colleagues (2018) in Binh Thuan showed that pregnant women living in the city had a higher rate of correct knowledge about prenatal screening than pregnant women living in the city. in districts [29] . After the intervention, the proportion of pregnant women with correct knowledge about prenatal screening increased from 47.3% to 73.8% ($p < 0.001$; CSHQ = 56.3%). After the intervention, knowledge about prenatal screening among pregnant women attending antenatal

care at the primary health care level in Binh Duong province increased from 47.3% to 73.8%. This shows the effectiveness of strengthening the organization of training on reproductive health knowledge in general and prenatal screening in particular for basis health workers and the network of local population collaborators. ; The effectiveness of enhancing prenatal care communication for pregnant women (zalo, facebook, SMS) and prenatal screening consultation at health stations.

Effectiveness of the intervention in improving attitudes about fertility: Before the intervention, the proportion of pregnant women with positive attitudes about prenatal screening in our study was 63.2%. This result is lower than the study of Nguyen Thi Phuong Tam (2013) in Thu Thua district with a positive attitude reaching 88.7% [41] , the study of Hoang Thi Thu Hoai (2020) in Krong Buk district, province Dak Lak with a positive attitude reached nearly 90% (86 - 88% expressed positivity) [25] , research by Do Thi Nhien (2021) in Buon Ma Thuot city, Dak Lak province with a positive attitude reaching 81.8% [37] , research by Pop-Tudose ME et al (2018) in Romania with positive attitudes reaching 78.9% [91] . The differences may originate from cultural beliefs, local regions and the psychology of pregnant women in different countries and regions. Positive attitudes about prenatal screening in our study are not high because the performance of prenatal screening tests can be influenced by many factors leading to errors, and in many cases the initial diagnosis results are not high. The head is not accurate, causing anxiety and sadness, increasing the level of psychological pressure of pregnant women. After the intervention, the level of confidence of women coming for antenatal care at the primary health care level in Binh Duong province with prenatal screening tests increased due to the increase in correct knowledge of pregnant women about prenatal screening. from 47.3% to 73.8%, so it also affects attitudes about performing prenatal screening.

Effectiveness of intervention to improve practice on reproductive health: Before intervention, the proportion of pregnant women with correct general practice of prenatal screening in our study was 38.2%. This result is lower than the study of Vo Ngoc Minh Thu (2019) at the Obstetrics and Gynecology - Family Planning clinic in Long An province with general correct practice reaching 88.7% [49] . This can be explained because Vo Ngoc Minh Thu's research was conducted at a provincial Obstetrics and Gynecology clinic, so most women have economic conditions, practice proper prenatal screening and have enough drug addiction tests according to the direction guide. Research by Salvi MS (2020) in the United Arab Emirates shows that only 14.74% of pregnant women have performed a Double test, the two main reasons why pregnant women refuse to be tested. Double test is high cost 43.65% and religious belief 25.39% [94] . After the intervention, the practice of prenatal screening among women attending prenatal care at the primary health care level in Binh Duong province increased due to increased knowledge and positive attitudes of women about prenatal screening, which also affected influence the practice of performing prenatal screening. Research by Vu Van Hoan

and colleagues (2017) in 2 communes of Thuan Chau district, Son La province, with solutions to mobilize the participation of the government and community in mobilizing people to implement regulations on motherhood safety, the results showed that the intervention effectiveness in the evaluation indicators of safe motherhood practices increased from 17% to 35% [27] .

CONCLUDE

1. Current status of knowledge, attitude and practice of prenatal screening among pregnant women in Binh Duong province, 2018

The proportion of pregnant women with correct general knowledge about prenatal screening is 41.8%, a positive attitude about prenatal screening is 65.6%, and correct general practice about prenatal screening is 32.1 %.

Some factors related to pregnant women's knowledge about prenatal screening ($p < 0.05$): place of residence, occupation of pregnant women, education level, number of pregnancies.

Some factors related to pregnant women's practice of prenatal screening ($p < 0.05$): education level, knowledge and attitude about prenatal screening, participation in prenatal classes, Pregnancy check-up on schedule, ultrasound on schedule, exposure to toxic environment.

2. Current status of providing prenatal screening services and some influencing factors at the basis health level in Binh Duong province, 2018

Current status of providing prenatal screening services at the basis health level : Regarding professional qualifications, the total number of medical staff at the Health Center is 57 people, midwives have the largest number (25/57), doctors (12/57), 100% of doctors have specialized in Obstetrics and Pediatrics. At the Health Station, there are 390 people, the largest number of doctors (150/390) and there are no laboratory technicians, 83.2% of doctors specializing in Obstetrics and Pediatrics. Regarding training to provide prenatal screening services, 54.3% of staff were trained at Health Centers, 20.8% of staff were trained at Health Stations. Regarding facilities, 88.9% of Health Centers and 59.3% of Health Stations have full rooms providing prenatal screening services. Regarding medical equipment providing prenatal screening services, 22.2% of Health Centers and 79.1% of Health Stations are fully equipped with essential medical equipment.

Some factors affecting the provision of prenatal screening services: Characteristics of pregnant women, human resources providing prenatal screening services, facilities *and* medical *equipment* of the health care facility facilities , management of essential reproductive health care services , communication to improve knowledge, attitudes, and practices about prenatal screening: Not yet flexible in organizing communication activities.

3. **Evaluate the results of intervention in the capacity to provide prenatal screening services and improve knowledge, attitudes, and practices of pregnant women and at basis health facilities.**

Results of intervention in capacity to provide prenatal screening services at local health facilities: Regarding training to provide prenatal screening services, the proportion of medical staff trained at Health Centers increased from 54.3% to 65.8%, the difference is not statistically significant ($p > 0.05$), Health Stations increased from 20.8% to 28.3% ($p < 0.05$). Regarding medical equipment providing prenatal screening services, Health Centers have all 9 items, increasing from 22.2% to 44.4%, Health Stations have all 8 items, increasing from 72%. up 82% ($p < 0.05$).

Results of intervention on knowledge, attitude, and practice of prenatal screening among pregnant women : The proportion of pregnant women with correct knowledge about prenatal screening increased from 47.3% to 73.8% ($p < 0.05$; CSHQ = 56.3%), with a positive attitude about prenatal screening. increased from 63.2% to 80.7% ($p < 0.05$; CSHQ = 27.4%), correct practice of prenatal screening increased from 38.2% to 67.9% ($p < 0, 05$; CSHQ = 77.6%).

RECOMMENDATIONS

Through the research results, we would like to propose the following recommendations:

Recommendations for pregnant women

Pregnant women need to proactively have regular prenatal checkups at least 4 times during the three stages of pregnancy at a medical facility to manage and monitor the health of mother and fetus and receive advice on prenatal screening. ; It is necessary to be fully vaccinated according to the instructions of medical staff to prevent disease. Closely participate in the pregnancy management program at the local Health Station, do a good job of updating knowledge, attitudes, and correct behaviors to have a healthy pregnancy and minimize babies born with birth defects. Congenital. Avoid risk factors that affect pregnancy health.

Recommendations for Health Stations

Strengthen review, management and monitoring of pregnant women to guide and encourage them to participate in prenatal screening. Focus on workers in industrial clusters and low-income pregnant women.

Promote communication work to raise awareness for pregnant women about prenatal screening in many different forms; focus on adaptive communication via social networks (zalo, facebook, viber,...); In particular, including pregnant women in counseling groups managed by medical staff in charge of the program has been very effective.

The specialized network and basis population collaborators need to promote propaganda work and consider telephone consultation to replace traditional family

visits for pregnant women and women of age. about the purpose, meaning, and process of prenatal screening.

Regularly update knowledge for the network, invest in facilities to ensure eligibility to deploy the technical expertise list according to division.

Recommendations for Health Centers

Strengthen communication training, consulting, and audience management for collaborators and officials in charge of population and health in the locality.

Coordinate with specialized units to build, duplicate and provide communication products on prenatal screening content. It is necessary to focus on form, content, and expression suitable for specific, hard-to-reach population groups in difficult areas, diversifying media products.

Develop a long-term plan to implement a list of specialized techniques related to screening for birth defects: human resources, equipment, models,... to ensure sustainability towards the common national goal .

Recommendation to the Department of Health of Binh Duong province

Strengthen the guidance and direction of specific activities from the province to the basis, closely coordinate between management boards at all levels, provide and exchange information on the implementation of prenatal screening, and include it in the directives. Goals and implementation plans of the health sector.

Strengthen professional decentralization, assign tasks, etc. towards being proactive in local resources.

Advise on policies to support collaborators and basis medical staff through the Provincial People's Council to create sustainability of the program.

----------THE END----------