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The role of the Speech Therapist in the Birth Support Courses of the Marche region: proposal for a diagnostic therapeutic assistance pathway.

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ABSTRACT

OBJECTIVE

Proposing a Diagnostic Therapeutic Assistance Pathway (PDTA) that enhances the preventive role of the Speech Therapist within Birth Support Courses (CAN), aiming to raise awareness and enhance parental skills regarding the communicative-linguistic, oro-facial-swallowing, and feeding development of newborns, thereby preventing potential disorders and difficulties in these areas.

MATERIALS AND METHODS

A narrative review of the literature concerning Guidelines and PDTAs published in the Marche Region related to the Birth Pathway and Prevention in Early Childhood was conducted. The objective was to synthesize information regarding care models organized to promote and monitor the well-being of future parents during pregnancy and in the months following childbirth, as well as prevention programmes concerning the child's first 1000 days of life. The project is implemented by hypothetically involving the Territorial Health Companies (AST) of the Marche Region to develop a PDTA addressed to parental couples being comprised according to specific inclusion criteria (age over 18 years, residing in the Marche Region, physiological pregnancy, Italian native speakers or with at least B1 level of Italian language proficiency, consent to participation expressed during recruitment) and exclusion criteria (pregnant women in the period between 0-5 months). Within the various proposed meetings in the CAN, to integrate the activities of the Speech Therapist with those of other professionals, timetables and flowcharts are hypothesized concerning preventive actions for psychomotor and communicative-linguistic development in children aged 0 - 3 years. The healthcare programme also involves defining indicators of structure, process, and outcome.

RESULTS

Conceiving a comprehensive and active clinical network, from prevention to empowerment, through a PDTA (Diagnostic Therapeutic Assistance Pathway) tailored on the real needs of parents and developmental age, which involves an interdisciplinary approach to guide the selection of training and informative contents towards understanding oro-sensory experiences and communicative-linguistic aspects, integrating them within family's environment.

DISCUSSION AND CONCLUSIONS

The role of the Speech Therapist in Child Protection Services (CAN) has a preventive objective, supporting the communicative-linguistic and oro-facial-nutritional development of children. Building trust with the various professional figures involved in the PDTA (Diagnostic Therapeutic Assistance Pathway) increases parents' sense of security and adherence during pregnancy, childbirth, and the postnatal period.

The PDTA serves as an appropriate tool for preventing oro-facial and communicative-linguistic issues in developmental age, facilitating the work of the Speech Therapist in interdisciplinary teams, and supporting active participation of families throughout the regional territory of Marche Region. The creation of a comprehensive therapeutic and care pathway aimed at implementing the preventive role of the Speech and Language Pathologist within Childbirth Accompaniment Courses has the objective of enhancing parental awareness and skills as far as communicative-linguistic, oro-facial, swallowing and nutrition development is concerned.

Keywords: Speech Therapist; Prevention; Antenatal Classes; Integrated Care Pathways; Healthcare Professional; Communication, Language; Swallowing; Feeding; Developmental Age; Healthcare Management.

INTRODUCTION

The Diagnostic Therapeutic Assistance Pathway (DTAP) is defined as a Clinical Governance organizational tool. The improvement of healthcare processes constitutes the objective of DTAP, achieved through cost and/or consumption reduction, decreased variability, and limitation of heterogeneity in clinical approaches [1]. DTAP is a tool enabling the creation of scientific evidence through a methodological approach of universal calculation and the definition of objectively measurable, easily interpretable, comparable, and straightforwardly depictable indicators [2].

DTAP primarily analyzes and develops healthcare issues related to chronic conditions or complex health needs. However, it could also be employed preventively by adopting healthcare actions to yield long-term benefits and by modifying the organization of the birth path regarding support modalities for parenthood and early childhood.

The construction methodology of DTAP is defined and characterized by four phases: design, operational applications, implementation, and monitoring [3].

Analysis of DTAP in the Marche Region

The Resolution of the Marche Region on the reorganization of Clinical Networks and its further modifications initiate a developmental process of such system in the regional territory, along with the production of the document "The development of Clinical Networks in the Marche Region" [6].

These networks are structured around groups of pathologies requiring the involvement of various care and assistance settings; these are the structures in which DTAPs are defined, developed, and ameliorated.

In 2014, the Marche Region outlined guidelines for the preparation of Diagnostic Therapeutic Assistance Pathways (DTAPs) and Integrated Care Plans (ICP) [7]; subsequently, between 2016 and 2021, 14 DTAPs were implemented through Regional Government Resolutions (DGR) [8] [9] [10] [11] [12] [13] [14] [15] [16] [17] [18] [19] [20] [21].

The DTAPs of the Marche Region exhibit the following characteristics:

1. The promoting subject coincides with the "Maximum Managerial Function" both at the regional and Territorial Health Companies (AST) levels or, alternatively, with a group of motivated professionals. The decision to activate a DTAP is formalized through an executive determination, and the type of act adopted is predominantly represented by resolutions of the Regional Government.

2. The choice of health problem, as analyzed from the DTAPs present in the Marche Region, shows that the identified pathologies are predominantly chronic, of neurological or autoimmune basis, and to a lesser extent, acute.

3. The construction of the interdisciplinary working group involves the identification of Regional Health Service (SSR) professionals with specific skills, supported by interest groups represented by associations.

4. The critical review of literature is based on the identification of guidelines, where available, on the subject. The Appraisal of Guidelines for Research and Evaluation II (AGREE II) tool is used for their quality evaluation. Alternatively, the best scientific evidence published in Italian/English within the last 3 years is recommended.

5. The drafting and graphic representation of the DTAP consist of a detailed description of demographic factors and the examined pathology, with sections dedicated to epidemiology, pathogenesis, identification of at-risk groups, diagnostic tests, and complications. Moreover, flowcharts are provided for the various phases, enabling the identification of subjects entering or exiting the pathway.

6. Economic sustainability is generally entrusted to the SSR entities within the allocated budget, without additional costs. Hence, specific funding is not provided.

7. The planning of the assessment system, represented by indicators, has to do with the national document of the Ministry of Health regarding the adherence to DTAP recommendations, currently showing that there is still low adherence in the Marche Region.

8. Monitoring includes an annual interdisciplinary/interprofessional peer review program to assess the degree of DTAP implementation. Furthermore, evaluations are also conducted on the integration between Services and DTAPs using the AUDIT tool. Planning at the DTAP level, including staff training, is delegated at the company level, implying a scarcity of interregional and interinstitutional relationships.

In the Marche Region, the latest DTAPs (e.g., on heart failure) have been set up based on an innovative operational choice. The considerations underlying the procedural change were as follows:

- The recommended healthcare pathway by DTAP often remains distant from what patients directly experience.

- Healthcare professionals often exhibit poor collaboration; when technological, organizational, and managerial changes are introduced, they perceive their field experience as distant from the theoretical-conceptual settings used to draft the DTAPs.

- The need to investigate the limited economic resources of the SSR with the constant increase in demand and progressive technological innovation.

- Enhancement of economic aspects' functionality, evaluating the impact of innovations to be included in the budget.

As a decision support tool, the Health Technology Assessment (HTA) [24] process has been experimented with - involving heterogeneous participants in terms of professions (medical, statistical, economic, managerial, and engineering fields) in constructing reports on selected pathologies, which were chosen based on their incidence, economic commitment, the need to renew some organizational and/or healthcare aspects [25, 26]. The project envisages the establishment of a regional HTA network in the following areas: collective prevention and public health, district assistance, socio-health assistance, and hospital assistance. The goal is to support, at a scientific and informational level, both regional and company healthcare choices and actions to be taken, as well as the digitalization of services. An innovative and transversal aspect is represented by the inclusion of health-and-social Family Learning interventions in existing DTAPs for chronic and fragile conditions.

The Family Learning, conceived since 2005 by the Research and Service Center on Socio-Health Integration (CRISS) of the Polytechnic University of the Marche, is an innovative form of Patient Therapeutic Education (PTE), also intended for family members and to be carried out in non-healthcare settings. Alongside healthcare and social-health professionals, through organized meetings managed by a tutor acting as a facilitator, they address specific topics to foster autonomy in disease management. The goal is to bring care processes closer to daily life, allowing for easier disease management.

Childbirth Accompaniment Courses

The World Health Organization promotes the establishment of a system providing quality care during pregnancy, childbirth, and the postnatal period [29].

Childbirth Accompaniment Courses (CAC) are one of the activities characterizing Family Counseling Centers (FCC) and enable reaching many family units within diverse socioeconomic groups.

They represent an operational tool with strong potential in guiding the parental couple towards welcoming newborns.

Such courses take place through meetings that have increasingly characterized a participatory approach aimed at empowering women and couples through greater involvement of the partner, addressing all aspects, from physical to psycho-relational and social, deeply involved in the childbirth event. The future perspective of CACs consists of Birth Accompaniment Meetings (BAM), which will aim to develop not only throughout the entire pregnancy but also after childbirth.

According to the national survey on FCCs by the Higher Institute of Health (ISS) for the biennium 2018-2019, the following emerges:

- ***Number of pre-partum meetings***

CACs constitute the area where activities are most frequently carried out at the company or district level (94.4%), emotional and sexual education (88.9%), and breastfeeding support (87.8%). A higher proportion is observed in the North compared to the Center, South, and Islands. Exceptions include Lombardy in the North (5.8%) and Umbria in the Center (45,2).

The average number of encounters expected for Childbirth Preparation Courses (CPC), estimated from 886 Family and Childcare Centers (FCCs) that reported the information, is approximately 9 overall [29]. In the Northern Regions and the Autonomous Province (AP) of Trento, the number of encounters expected in CPCs is lower compared to the Center and South and Islands. CPCs consisting of 6-8 encounters are more common, while in the Central and Southern Regions compared to the North, CPCs consisting of 9-10 encounters are more frequent.

The significant variability in the number of courses offered is not associated with the North-South gradient but rather with the availability of midwives in FCCs. As the number of working hours of midwives increases compared to the recommended standard, the number of CPCs organized per 100 live births increases.

Additionally, the ratio [30] demonstrates how women's adherence to FCC care pathways is strongly correlated with the quantity and quality of CPC care offered. Regarding the peak start of courses in the North and Center, it is noted, corresponding to the seventh month of gestation, in approximately 60% of FCCs organizing CPCs; in FCCs in the South and Islands, the start is more frequently anticipated (4-6 months of pregnancy) compared to the Center and North.

It would be advisable to assess whether starting CPCs at 4-5 months of pregnancy could promote women's empowerment by activating a process of awareness arousal about pregnancy and parenting issues, which may be more challenging if CPCs are reserved for the last months of pregnancy when attention tends to focus mainly on aspects related to childbirth.

- ***Number of Postpartum Encounters***

In addition to CPCs, some FCCs provide postpartum encounters to consolidate parental support and achieve their gradual autonomy. The average number of postpartum encounters estimated from 961 FCCs reporting the information is 1.5 [30]: North = 1.3, Center = 1.8, South and Islands = 1.4. Regarding the distribution of the number of postpartum encounters offered by FCCs and expected in CPCs, for all geographical areas, the maximum frequency occurs with one encounter (50.9%, 45.8%, and 38.2%, respectively, for the North, Center, and South and Islands). In FCCs in the South and Islands, the proportion of FCCs that provide 2 postpartum encounters is about twice (21.8%) that of FCCs in the North and Center (12% in both areas). Regarding specific activities, some geographical differences are evident with a North-Center-South gradient as indicated below.

- ***Topics***

A considerable percentage of FCCs addresses general parenting issues in CPCs (North 99%, Center-South 94%), as well as specific topics such as childcare, pregnancy lifestyle, and breastfeeding. The survey found that out of 1226 FCCs dealing with young people or couples/families, 82% offer counseling activities to support parenting, without distinction by geographical area. Less addressed but still with high percentages, 82-92%, is the topic of vaccinations.

- ***Participation***

The percentage of pregnant women participating in CPCs is evaluated as the ratio between the number of women who participated in at least one CPC encounter, recorded by the survey, and the newborns in the area under examination [30]. The estimation of this indicator depends on the participation in the survey of individual consultative site, which must not be less than 70%. The profile of the indicator [30] shows a great variability at the regional level. No differentiated data emerge regarding the nationality of the couples participating in CPCs. The AP of Trento (49.8%), Tuscany (48.9%), and Umbria (54.3%) are the territorial realities for which the highest participation is estimated. Generally, albeit with some exceptions, participation in CPCs is lower in the Southern Regions and Islands probably due to different operational modalities adopted for the birth pathway.

- ***Professional Figures Involved***

The professional figure most frequently involved in CPCs is the midwife in all 3 geographical areas with a percentage of 99.8% for the North, 98.2% for the Center, and 90.0% for the South and Islands [30]. CPCs involving the figure of the gynecologist instead show great variability by geographical area ranging from 23.2% in the North to 33.6% in the Center and 71.5% in the South and Islands. In the South, compared to the Center and North, psychologists and social workers are more frequently involved in CPCs [30] with a percentage of 79.2% and 49.0%, respectively.

The involvement of cultural mediators appears low and with a decreasing North-South gradient, reflecting, at least in part, the different presence of immigrant population in the 3 geographical areas. Generally, FCCs in the North more frequently make use of cultural mediators compared to the Center and South and Islands, while in the Center Regions the use of multilingual materials is more widespread; in the South and Islands Regions, the proportion of FCCs that do not use any such tool is higher. Additionally, in half of the FCCs, CPCs do not involve professionals from territorial Birth Points (BP).

The absence of this connection can be interpreted as an indicator of lack of service integration and is more frequent in FCCs in the South and Islands (67.6%). If provided, it is more common for the encounter to take place at the BP. Regions contrary to the predominant offer in their geographical area are Lombardy and Umbria, respectively with 67.3% and 68.2% of FCCs that do not involve BP professionals in CPCs. Molise is an exception with a high participation of BP Professionals.

Considerations on CPCs in the Marche Region

- ***Dissemination of FCCs and BP on the territory (Marche)***

With one FCC headquarters per 25,229 residents, a value close to the gold standard of one headquarters per 20,000 inhabitants and much lower than the 32,325 residents per headquarters of the national average, the Marche Region can count on a good spread of FCCs in its territory, ranking among the 7 realities (6 Regions and 1 AP) with the highest presence of FCC headquarters in the national landscape. Furthermore, among FCCs including the BP, there are 12 in the Region [31]

- ***Availability of staff in FCCs*** **[30]**

Overall, the coordinators of the consultative services of the 5 Health Protection Agencies (HPAs) reported the presence of 61 sites and 25 complete teams with a variable ratio from 1 to about 3 sites per team and with one HPA for which the absence of complete teams is noted. The availability of the gynecologist professional figure (9.5 hours) is below the national average and about half compared to the gold standard of 18 hours. The availability of the midwife figure (28.7 hours) is above the national average but below the gold standard of 36 hours.

The availability of the psychologist professional figure (23.3 hours) is above the national average and the reference value of 18 hours, placing the Marche Region amongst the 5 Regions with the highest availability of this professional figure.

The availability of the social worker figure (16.3 hours) is above the national average although far from the gold standard of 36 hours. There is a wide variability between the different HPAs in the composition of the consultative teams and in the overall availability of staff worthy of attention.

Regarding the percentage of FCCs carrying out activities within the strategic programs indicated by the Mother and Child Objective Project (MCOP) [32], the Marche Region is predominantly below the national average for sites that follow the entire pregnancy (62.7%) with the lowest value nationwide, for sites that offer CPCs (50.8%) ranking within the 3 Regions with the lowest values. The organizational method of identifying some FCC sites that act as Corporate Reference Centers (CRCs) for certain activities does not seem to have been widely adopted in the Marche Region. There are no young spaces identified as CRCs compared to a national average of 17.9%, while the sites offering CPCs as CRCs are 8.5% compared to a national average of 12.7%.

The Regional Prevention Plan: the role of the Speech Therapist in Childbirth Accompaniment Courses

The Marche Region has prepared its Regional Prevention Plan (RPP) with effect from 2021 to 2025 [33]. Here, the importance of further developing, reorganizing, and strengthening clinical networks is reiterated, in relation to what has also been determined by the Covid-19 emergency. Analyzing and selecting the actions reserved for Early Childhood in the Synoptic Table "Strategic Objectives/Programs" of the RPP, the following intervention areas for the developmental age are highlighted:

a) Promote health in the first 1000 days.

b) Promote interventions aimed at promoting breastfeeding.

c) Early identification of child development difficulties from 0 to 36 months.

d) Early identification of risk signals for child distress.

e) Develop and/or improve the knowledge and skills of all members of the school community, acting on the educational, social, physical, and organizational environment and strengthening collaboration with the local community.

f) Promote conscious adoption of a healthy and active lifestyle at all ages and in life and work settings, integrating individual change and social transformation.

g) Implement the knowledge and skills of all members of the school community, acting on the educational, social, physical, organizational environment and strengthening collaboration with the local community.

h) Increase risk perception and individual empowerment.

i) Promote the skills of the involved operators and workers.

l) Early identification and management of subjects at increased risk, offering programmes aimed at risk limitation and damage reduction.

MATERIALS AND METHODS

Project Proposal

In structuring the project, a narrative review of the literature on guidelines [34] [35], on the Diagnostic Therapeutic Assistance Prevention Pathways (DTAPP) [36] [37] [38] [39] [40] [41] [42] [43] existing for the birth pathway, and on projects present in the Marche Region was carried out. From the Report "Surveillance System for children 0-2 years of the Marche Region - years 2018/19", the following epidemiological data considered functional to the project were extrapolated (Marche Region, 2020) [44]:

a) Population:

- In the Marche Region, 2,090 mothers were interviewed, with a participation rate of 95.5%.
- 26.1% of interviewed mothers are under 30 years old, 33.0% are between 30 and 34 years old, and 40.9% are over thirty-five years old. The overall average age is 33.1 years.
- 20.6% of mothers were born abroad.
- 44.9% have completed high school, and 39.1% have a degree.
- 19.9% do not have a job, while 40.5% have declared having some or many difficulties in making ends meet with the available income.
- 54.8% of mothers are first-time mothers, while 45.2% of mothers have multiple children.
- 64.7% of mothers participated in a CPC, against 35.3% who did not have access.

b) Breastfeeding Duration

39.9% of children were exclusively breastfed for 4-5 months, and 36.4% continue to receive breast milk at 12-15 months. The correlation between the presence of exclusive breastfeeding and Socio-Economic Status (SES) shows an inversely proportional relationship: mothers with a low level of education (35.8% lower secondary school diploma), with economic difficulties (39.1% reported percentage), and who did not participate in CPCs (with a percentage of 40.2%) breastfeed exclusively for a shorter period.

c) Early and Shared Reading

Among children aged 6-12 months, 38.2% have not been read to in the week prior to the interview, while among those over 12 months, this figure drops to 25.1% [44]. Reading to children at an early age has been assessed in association with the following variables: level of education, parity, country of birth, age, and mother's propensity to read. The results confirm that all considered variables have an independent and statistically significant effect on the presence/absence of reading aloud. Therefore, the lack of reading to children is more widespread in

the presence of non-reading mothers, aged over 35, primiparous, and, considering low education level, among women born abroad who report economic difficulties [44].

d) Screen Exposure

29.1% of children under 6 months spend time in front of a TV, computer, tablet, or smartphone, and 68.0% above one year of age. Foreign birth and economic difficulties make screen exposure more prevalent [44]. The project involves the selection by the 5 ASTs, participating in the implementation of the PDTA, of a population of parental couples. The inclusion criteria identified are as follows: parental couples over 18 years of age, residing in the Marche Region, with a physiological pregnancy, Italian native speakers or foreigners with at least a B1 level of Italian language proficiency, and who have consented to participation during the recruitment phase. In this case, the chosen exclusion criterion was unique: women within the first 5 months of pregnancy. The intervention focuses on implementing neuropsychomotor and linguistic development in children aged 0-3 years, through actions involving oral function development, promotion of breastfeeding, and early reading.

RESULTS

Project Hypotheses

Then, project timelines (Tab. I, Tab. II) are hypothesized to highlight the temporal dimension in which Speech Therapists could intervene with their skills in a transversal perspective with other professional figures. The timeline of Table I, phases A and B, concerns the period from the 6th month of pregnancy to birth. It develops, in two distinct periods, professional synergies between the Speech Therapist, Early Neuropsychomotor Therapist, and Midwife.

Activity	Language Development and Neuropsychomotor Development
Professional	Speech Therapist + Neuropsychomotor Therapist
Number of Meetings/Duration	2 X 4 hours
Gestational period	6th month of gestational age
Required Skills	Understanding the main scientific evidence regarding protection and support for language development. Understanding the stages of communicative-linguistic and neuropsychomotor development. Understanding the most relevant methodological-didactic strategies. Possessing transcultural knowledge and the ability to identify learning styles. Possessing basic Counselling skills. Possessing interdisciplinary competencies.
Setting	Maternal and Child Health Center

Tab. I Phase A Timetable (Authored by the Researcher)

Activity	Breastfeeding and Development of Oral Functions
Professional	Speech Therapist + Midwife
Number of Meetings/Duration	2 X 4 hours
Gestational period	7th month of gestational age
Required Skills	Understanding the scientific evidence on breastfeeding. Understanding the stages of feeding development, the use of aids, habits, and their correlations with language development. Understanding the main methodological-didactic strategies. Possessing transcultural knowledge and the ability to identify various learning styles. Possessing basic Counselling skills. Possessing interdisciplinary competencies.
Setting	Maternal and Child Health Center

Tab. I Phase B Timetable (Authored by the Researcher)

The schedule of Tab. II, Phases A, B, C, develops in the period between the 3rd and 36th month of the child's life. The training consists of a total of 12 hours on reading aloud to be conducted between the 3rd and 12th month of the child's life. Subsequently, between 12 and 36 months, monitoring begins, every six months of the child's communicative-linguistic skills through the administration of two questionnaires for parents: Child's Socio-Conversational Skills (ASCB) [45], and Child's First Vocabulary (PVB)-Short Form (Gestures and Words - Words and Phrases) [46].

These tools, quick and manageable in administration, involve parents and have predictive and prognostic purposes regarding the areas they investigate. They allow tracking the strengths and weaknesses of the child's socio-pragmatic and communicative-linguistic skills so that real needs can be recognized [46] [47]. Finally, between 24 and 36 months, collaboration is established to create parental groups, as per Family Learning guidelines, to promote empowerment actions in non-healthcare settings.

Activity	Training on Reading Aloud (Book Selection, Narrative Modes, Language Modeling Techniques)
Professional	Speech Therapist
Number of Meetings/Duration	6 X 2 hours
Period	Between the 3rd and 12th month of the child's life
Required Skills	Possessing specific training in prevention and promotion of communicative-linguistic development. Understanding strategies to implement narrative skills based on the best scientific evidence on the subject. Possessing basic Counselling skills.
Setting	Maternal and Child Health Center

Tab. II Phase A Timetable (Authored by the Researcher)

Activity	Monitoring Communicative-Linguistic development through parental Questionnaires 1. Child's Socio-Conversational Abilities ("Abilità socio-conversazionali del bambino") (ASCB). 2. Child's Vocabulary – MacArthur-Bates CDI Italian Questionnaire brief version "Gesti e Parole" (8-24 months) - "Parole e Frasi" (18-36 months).
Professional	Speech Therapist
Number of Meetings/Duration	1 X 2 hours once every 6 months
Period	From the 12th to the 36th month of the child's life
Required Skills	Specialized training in Assessment of Communicative-Linguistic competencies within the Developmental Age
Setting	Maternal and Child Health Center

Tab. II Phase B Timetable (Authored by the Researcher)

Activity	Creating Parental Groups
Professional	Autonomous Parents Group
Number of Meetings/Duration	1 X 2 hours once every 4 months
Gestational period	From the 24th to the 36th month of the child's life
Required Skills	Practicing exchange sharing and interdependence. Becoming aware of group dynamics. Managing of decision-making processes.
Setting	Non-healthcare space.

Tab. II Phase C Timetable (Own Production)

The control group referred to consists of participants in CANs organized without the inclusion of the Professional Figures of the Speech Therapist and the neuropsychomotor therapist, where topics related to communicative-linguistic and neuropsychomotor development and storytelling are not addressed.

The final project elaboration is synthesized in the two flow charts (Tab. 3 and Tab. 4).

In the first graph (Tab. 3), the recruitment of parents with low-risk pregnancies into CANs is illustrated by various professional figures (Gynecologists, Midwives, Pediatricians, and General Practitioners).

An introductory meeting is also planned to introduce all CAN professional figures and the schedule of meetings specifying the organized contents addressed in CANs by other professional figures (Gynecologist, Pediatrician, Psychologist, Midwife, and Health Assistant).

Subsequently, the actions carried out by the Speech Therapist in collaboration with the other professionals provided in the PDTA (Neuropsychomotor therapist and Midwife) are described.

To measure outcomes, questionnaires will be administered to parents from both groups to obtain qualitative and quantitative data on pre- and post-course knowledge and satisfaction [47] [48].

Regarding the perceived quality in the birth path, a project by the Italian National Institute of Health involves the use of adapted versions of two validated questionnaires from the Irish National Maternity Experience Survey [49].

The tools to analyze the caregiver's knowledge about the timing and methods of acquiring developmental skills in the child are limited and published in English, requiring adaptation [50].

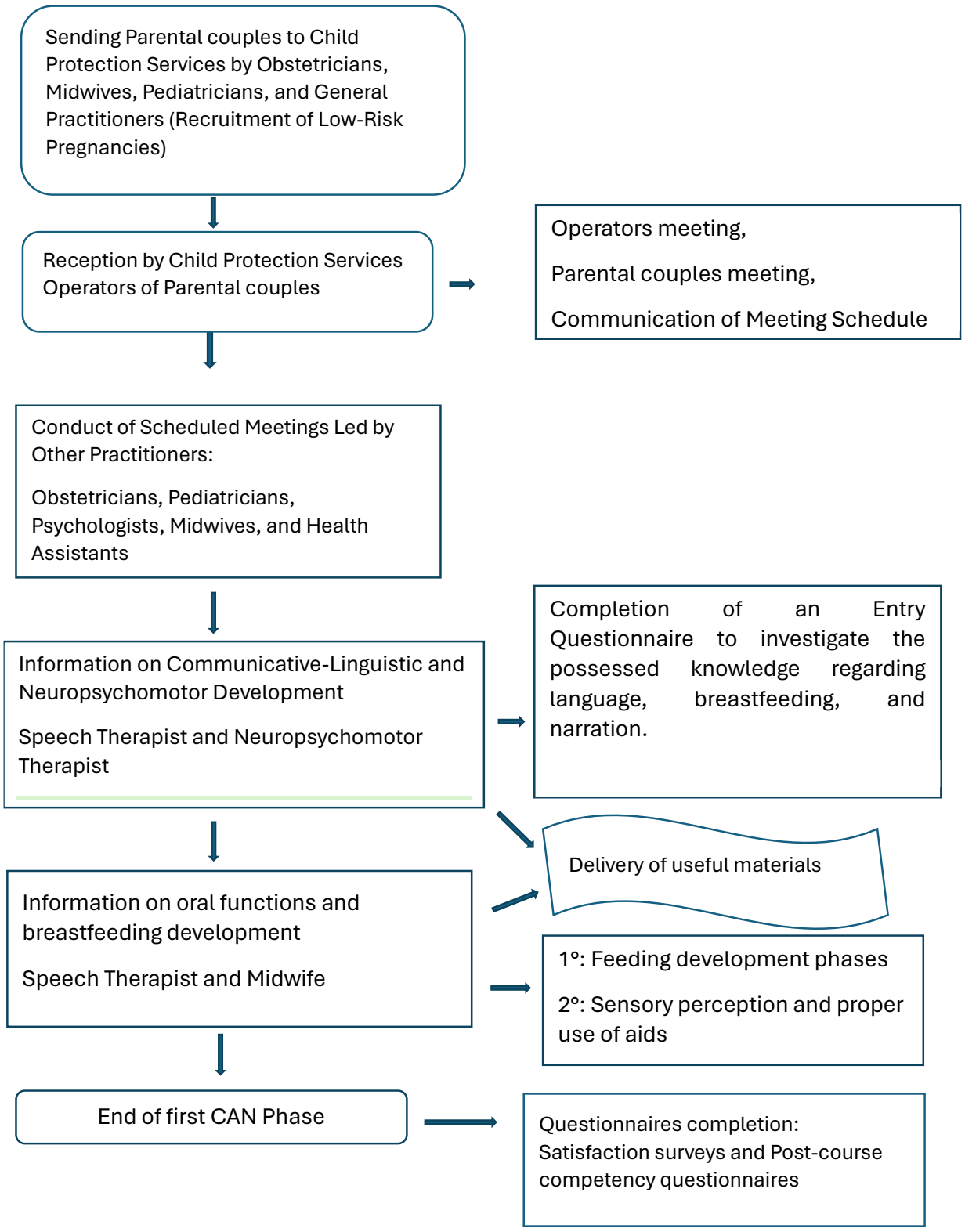
The document "Child Surveillance 0-2 years" [51] [52] presents some questions that investigate these aspects and could be used for an initial qualitative analysis of maternal attitudes by administering them before and after CAN participation.

However, there is a need to develop, also in Italian, a questionnaire to assess caregiver knowledge acquired in CANs about promoting communicative-linguistic aspects in child development.

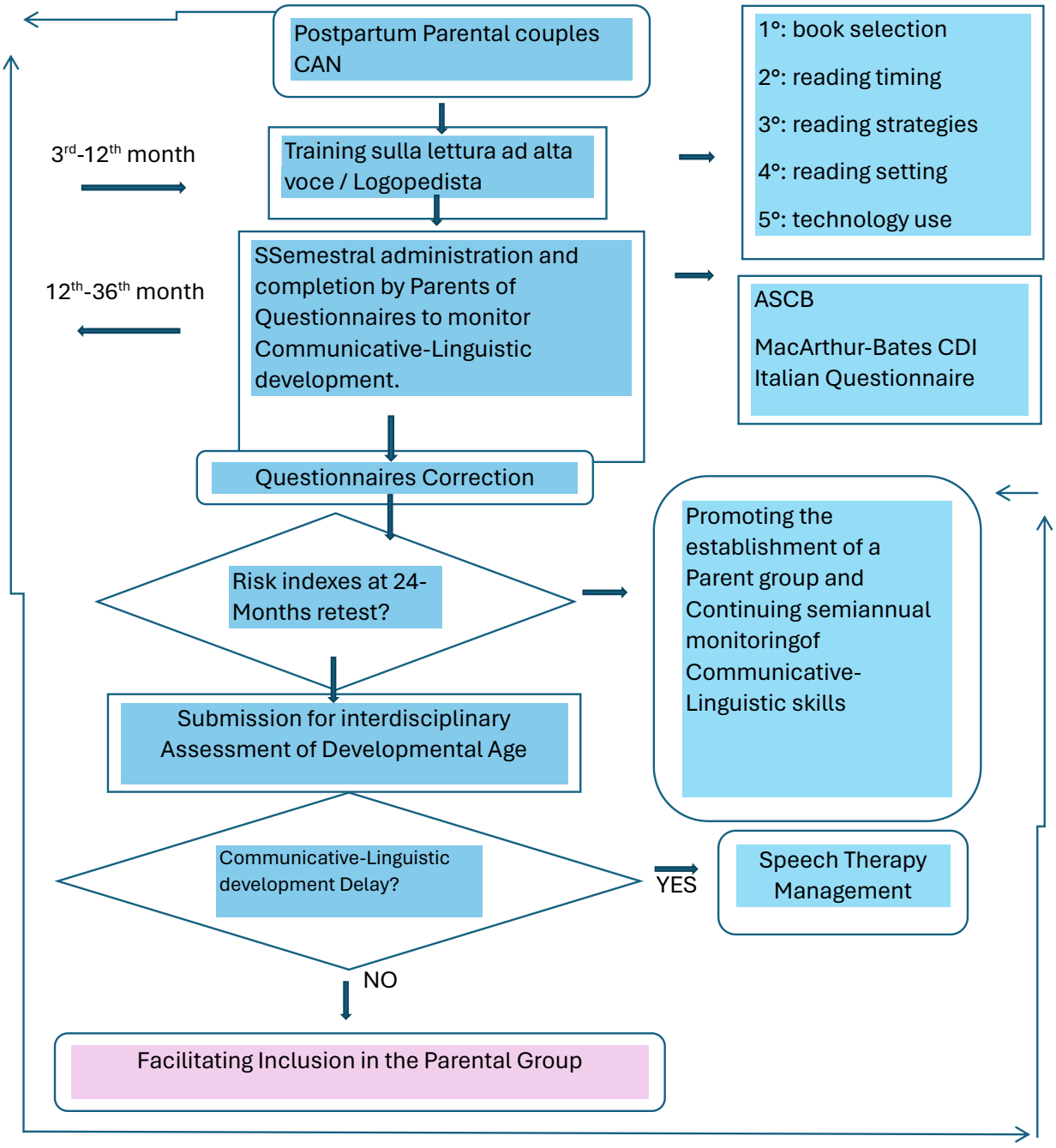
In the second flow chart (Tab. 4), training on reading aloud to be conducted between the 3rd and 12th month of the child's life is initially described.

The process continues with monitoring, every six months of communicative-linguistic development in children aged between 12 and 36 months, specifying in the flow chart the timing and procedures aimed at early identification of children at risk for language development.

At the same time, parental empowerment pathways are promoted. In relation to the Report "Child Surveillance 0-2 years of the Marche region-years 2018/19" [53], epidemiological data were extrapolated in support of the indicators of structures, process, and outcome reported in Tab. V.



Tab.III Summary Flowchart No. 1 from the Third Trimester of Gestation to Birth (Authored by the Researcher).



Tab. IV Summary Flowchart No. 2 from the 3rd month to the 36th month of the Child's life (Authored by the Researcher).

STRUCTURE INDICES	*%*
Number of Developmental Speech Therapists involved in CANs	100%
Number of working hours performed by Developmental Speech Therapists in CANs	100%
PROCESS INDICES	*%*
Number of women accessing Child Protection Services in the prepartum phase / Number of women giving birth in the year.	70%
Number of foreign women accessing Child Protection Services in the prepartum phase / Number of foreign women giving birth in the year.	25%
Total number of women accessing Child Protection Services in the postpartum phase / Number of women who have given birth in the year.	70%
Number of foreign women accessing Child Protection Services in the postpartum phase until the end of the meetings / Number of women who have given birth in the year.	25%
Number of women who have discontinued the postpartum support program after childbirth / Number of women who have given birth in the year.	30%
Number of parental couples attending in-person meetings / Total number of meetings.	70%
Number of foreign parental couples attending in-person meetings / Total number of meetings.	25%
OUTCOME INDICES	*%*
Number of mothers exclusively breastfeeding until the sixth month / Total number of mothers present in Child Protection Services.	50%
Number of foreign mothers exclusively breastfeeding until the sixth month / Total number of foreign mothers present in Child Protection Services.	50%
Number of infants breastfed until the sixth month / Total number of infants with other feeding methods.	20%
Total number of mothers breastfeeding between 12 and 15 months / Total number of mothers present in Child Protection Services.	40%
Total number of foreign mothers breastfeeding between 12 and 15 months / Total number of foreign mothers present in Child Protection Services.	
Number of 6-12-month-old infants exposed to reading aloud at least weekly / Number of 6-12-month-old infants never exposed to reading aloud weekly.	40%
Number of infants over 12 months exposed to reading aloud at least weekly / Number of infants over 12 months never exposed to reading aloud weekly.	70%
Number of infants under 6 months never exposed to screens daily / Number of infants under 6 months exposed to screens at least daily	80%
Total number of parental couples with positive feedback on questionnaires / Total number of parental couples participating in Child Protection Services	80% 40%

Tab. V Structure, process, and outcome indices (Authored by the Researcher)

CONCLUSIONS

The survey of CANs and the reading of various prevention projects for the developmental age have highlighted how the aspect of interdisciplinarity is not sufficiently represented. Training plays a crucial role in the evolution of what said above. It would be pivotal to develop projects where one's professionalism is actively integrated with others in a shared and continuous learning path. In PDTAs, this component plays a significant role, and the perspective of HTA can contribute to realizing paths where synergy of available resources is possible [54]. Modifying informational and training approaches can improve the level of empowerment.

The actions of the Speech Therapist in the pre and postpartum phase, to be integrated with the use of illustrative video recordings and online meetings interspersed with in-person meetings, would allow for a more interactive proposal with the parental couple, so that they become the first promoters of their child's health. Recent epigenetic studies support that environmental signals received during development can modify DNA expression by activating or deactivating genes [55]. The first 1000 days of life are confirmed as a crucial phase for environmental stimuli to leave their imprint.

Family routines represent the context that creates greater opportunities for ecological learning in the child. Educational and informative contents should be selected based on their ability to integrate with family routines to increase the program's implementational probabilities. Language and family are both characterized by subsystems that need continuous reinforcement, as they are strongly influenced by Socio-Economic Status (SES) and the level of education, particularly of the mother, as demonstrated by factors associated with greater participation in Childcare and Nursery Centers (CAN), such as: being over 30 years old, having medium-high education, being employed, having Italian citizenship, residing in a central-northern region, and the possibility of receiving assistance during pregnancy from family planning clinics or midwives. The consequences of a condition of poverty become evident from the age of two.

Literature on the subject indicates that high verbal stimulation corresponds to a reduction in the pruning of underutilized synapses in children. Another step involves the need to implement the participation of immigrant populations and those with lower levels of education through CANs. The discussed results can be achieved through the enhancement of the Speech Therapist's skills, within a perspective of transversality realized in the frame of prevention. Such perspective would represent an initial investment, as the effects would not be immediate but spread over time. The implementation of a regional Early Intervention Plan (PDTA) where the professional figure of the Speech Therapist is included in the CANs aims to contain atypical developmental trajectories in childhood, save economic resources of the National Health Service, and improve the quality of life of the family unit.

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