DEVELOPING ALGORITHMIC INSTRUMENTS TO HELP PROVIDERS AND USERS TO IMPLEMENT THE NEW REPRODUCTIVE HEALTH CARE GUIDELINES ISSUED BY THE MINISTRY OF PUBLIC HEALTH OF ECUADOR

Final Report of an INOPAL III In-House Project

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EXECUTIVE SUMMARY:

This project developed and tested algorithmic instruments to help providers to implement the new Reproductive Health Care Guidelines issued by the Ministry of Public Health of Ecuador with technical assistance from JHPIEGO. Two sets of instruments were designed: one to be used with women exposed to pregnancy and the other for obstetric care. The first set included an algorithmic flipchart and the second set included algorithmic posters. Prototypes of the flipchart and the poster concerning prenatal care were tested in service environments after which improvements were introduced and the final versions became available for immediate use. The tests included an assessment of (a) acceptance and use by providers and (b) their effect on service quality. Additionally, the untested posters and 15 pamphlets designed for users of family planning and reproductive health services were submitted to a validation and improvement on the basis of expert judgment. As part of the Dissemination Plan of INOPAL III, the Population Council made available to the Ministry of Health family planning/reproductive health flipcharts; posters on prenatal care, case management of obstetric emergencies, and perinatal health; as well as pamphlets for users for distribution at the national level..

I. INTRODUCTION

With the technical assistance of JHPIEGO, the Bureau of Development and Protection of the Ministry of Public Health of Ecuador (DFPMSPE) designed Reproductive Health Care Guidelines for providers. It was hoped that this effort would prove an essential step toward reducing maternal mortality, realizing reproductive intentions, and achieving other significant results for Ecuadorian women. DFPMSPE teams, together with representatives from other public and private organizations, worked on the design of the guidelines. In addition to traditional topics (family planning, maternal health, adolescence), the Ecuadorian guidelines also addressed menopause, violence, male participation, sexually transmitted diseases, bio-safety and others. A final draft was finished in April 1998. The DFPMSPE and JHPIEGO have sketched out a preliminary agenda for training Ministry personnel in the use of the guidelines (1999).

Problem

The Guidelines contain a vast amount of technical information and, consequently, are very hard to commit to memory. Second, the Guidelines are not expected to be easily applied by providers during consultations with users in the course of supplying services. Indeed, the guidelines come in the form of a handbook with a separate chapter for each topic. As well as having to deal with the physical difficulty of locating the page containing a particular piece of information, providers will also probably be worried that users, on seeing them constantly consulting the handbook, will be given the wrong impression as regards their technical competence, and may tend to discourage providers from using it. Third, the Guidelines will not in themselves be of any help to providers as far as organizing the way in which they administer services is concerned. Some providers will continue to use an effective approach with respect to what they need to ask or say at specific moments of their interaction with users, while others will stick to ineffective approaches they have developed personally.

Bearing these three factors in mind, a superficial, incomplete and inefficient use of the Reproducrive Health Care Guidelines by service providers in their daily work activities was expected.

The Guidelines could be accompanied with loose leaflets, triptychs, or pamphlets in other formats for service users. However, those currently available were beset with drawbacks. In the case of family planning, materials currently available were basically designed to help the user to choose a method but failed to pay much attention to their information needs as regards continued use. Consider, for instance, the instructions to the user who takes the pill. The best current ones fail to make a distinction between 21-day and 28-day packets. Leaflets concerning other family planning and reproductive health topics have similar deficiencies and in some areas do not even exist.

Proposed Solution: Algorithmic Instruments

In order to ensure the appropriate application of the Guidelines the Ministry decided to offer service providers a job aid that (a) efficiently organizes the way in which they administer services, responding to the individual user's needs; (b) contains the essential items of technical information found in the Guidelines; (c) is user friendly; and (d) is acceptable to providers.

Several INOPAL II sub-projects had developed and/or used instruments that could serve as prototypes for designing this job aid. One is the "ABC of Family Planning" (León, 1994); another is ALGOSISSAR (Algorithm and Guide for the Systematic Supply of Reproductive Health Services, Vernon and Ottolenghi, 1996). Both are structured algorithmically or as a decision-tree. In other words, they are interactive instruments that offer different courses of action depending on the peculiar characteristics of the user. In contrast to health care algorithms developed in the 1960s and for sometime afterwards, which were rejected by providers for being too schematic and difficult to follow during a user's visit, both the ABC and ALGOSISSAR break down the decision tree into discrete steps, one per page. These instruments have been tested in Paraguay, Peru, and Guatemala with partial success.

II. OBJECTIVES

The objectives of this operatios research project were:

- To design algorithmic flipcharts (ALGOFLIPS) for service providers and pamphlets for users, in order to help them to implement effectively the principles contained in the Ecuadorian Ministry of Health's new Reproductive Health Care Guidelines. Care to both pregnant women and women exposed to pregnancy will be considered.

- To test the instruments in order to assess (a) their acceptability and use by providers and users and (b) their effects on service quality.

- To produce copies of the instruments for the Bureau of Development and Protection of the Ministry of Public Health, with a view to their future application on a large scale.

III. METHODOLOGY

Design of Instruments

The instruments were designed at several workshops run by Ministry technical staff selected by the DFPMPSE (maximum of 12 per workshop) with assistance of international advisers.

The Design Workshop for Instruments for Pregnant Women gave priority to such maternal health issues as prenatal care, obstetric emergencies, and childbirth/postnatal care, and included as secondary topics family planning and gynecological health. It took place in Quito on April 21-23. The Design Workshop for Instruments for Women Exposed to Pregnancy undertook family planning and gynecological health (sexually transmitted diseases, cancer prevention). It took place in Quito on April 28-30.

Production of Instruments (First Version)

Ministry personnel found difficult the task of instrument development and several changes were introduced with respect to the original objectives.

- Only one algorithmic flipchart (ALGOFLIP) was designed, concerning family planning for women in risk of pregnancy. The ABC was taken as model.

- It was decided that reproductive health issues such as prevention of breast and cervix-uterine cancer and prevention of STDs/AIDS should be addressed by means of algorithmic wall posters.

- The proposed flipchart for pregnant women was replaced by the design of three algorithmic wall posters, concerning prenatal care, case management of obstetric emergencies, and care for the newborn.

- The pamphlets for users were designed in standard, nonalgorithmic format. The Ministry officers thought an algorithmic pamphlet would be too complicated for the common user.

An unprogrammed third workshop was necessary to complete the task (May 3-4, 1998). The prototypes resulting from the third workshops were pilot-tested in health service delivery points (SDPs) in Quito on the five business days immediately after the workshop. Between 5 and 10 users received care from DFPMPSE staff assisted by the instruments, and this experience served to introduce rough adjustments to them.

Training of Trainers

Once a number of prototypes were produced in Lima, Ministry personnel were trained in their use and their teaching to providers (May 11-12 and 27-29). At this step, Ministry personnel considered too cumbersome the posters on reproductive health and decided to incorporate their contents into the family planning ALGOFLIP, which thus became a Family Planning/Reproductive Health ALGOFLIP that included STD and cancer prevention.

Training for Providers

To test the effects of using the instruments, a quasi-experimental study was designed. Seventy-two hospitals and health centers in 16 Ecuadorian provinces were selected at random (4 or 5 per province). In each province, 2 SDPs were randomly assigned to the experimental group and 2 to the control group. Doctors and nurse-midwives from these SDPs were invited to take part in the study.

The 36 professionals belonging to the experimental group took part in a two-day workshop in Quito (June 8-9) in which the Reproductive Health Care Guidelines were distributed. On the first day of the workshop, 18 of them were trained in the use of the job aids for pregnant women and the other 18 in the use of those for women exposed to pregnancy. The two groups were swaped over on the 2nd day. The providers were advised to practice as frequently as possible in role-playing exercises like those used in the workshop and to start using the job aids with real clients as soon as possible. They signed consent forms for taking part in the study and were asked to train their colleages back at their SDPs. During the workshop, the providers suggested improvements and the job aids underwent further changes.

Thirty-one of the 36 members of the control group participated in meetings in Quito, Cuenca, and Guayaquil conducted by DFPSMPE staff at which the Reproductive Health Care Guidelines were distributed and discussed. The other 5, who had failed to attend the regional workshops, were visited individually. The 36 providers were enrolled in the study, signed consent forms, and were asked to disseminate the Guidelines among their colleages back at their SDPs.

IV. RESULTS

Distribution of Instruments

Given the time constraints of the project and a failure to keep its timeline, it was decided to limit the field testing of instruments to the prenatal poster and the FP/RH ALGOFLIP. Once the new changes were introduced into the poster and the flipchart in Lima, these were sent to Ecuador for distribution to the 36 SDPs of the experimental group of this study. About two weeks elapsed between the distribution of instruments and the visits by

simulated clients who gathered information to assess the quality of care given at these SDPs.

Simulated Clients

INOPAL hired a local consultant, Dr. José Ordóñez, who was in charge of the administrative aspects of the instrument-development and training workshops. He also organized and run the field test of instruments under the supervision of the DFPSMPE, the International Director of the Project and an International Field Supervisor. The cities of Quito, Cuenca and Guayaquil acted as the headquarters of regions arbitrarily delineated in such a way that the total number of cases was distributed evenly among them.

Fourteen women between 3 and 6 months pregnant were recruited and trained to perform as simulated clients, enacting their own clinical case before providers (except for the standard instruction to say they had nausea. They had been selected from a larger group of candidates on the basis of medical, psychological, and social criteria. The medical criteria led to the exclusion of women who presently had reproductive tract infections. The psychological criteria entailed memory functioning and a capacity to act naturally as they asked for services. The social criteria referred to representativeness of the general client population.

The simulated clients were trained to use a 52-item observation checklist concerning specific provider behaviors, e.g., whether he/she measured artherial tension, whether this was done properly, etc. (see Appendix 1). Additionally, the clinic histories of the simulated cases were revised according to a 26-item format (see Appendix 2). A total of 100 consultations were completed in 25 hospitals and 75 health centers in 17 provinces. Providers were physicians (N = 39) and nurse-midwives (N = 61), with a predominance of females (67%).

Seventeen women in risk of pregnancy were selected with similar criteria to assess the quality of the family planning/reproductive health services provided. Yet, instead of presenting their own case to the provider, they were trained to enact a standard client profile (see Appendix 3) and fill out a 101-item observation checklist concerning such specific provider behaviors as whether he/she used the algorithmic flipchart throughout the consultation, whether he/she asked her about the dater of her last menstruation, whether he/she told her that the pill may cause breast tenderness, what to do if she had severe headache and fuzzy vision, etc. (see Appendix 4). A total of 99 consultations were completed in 25 hospitals and 74 health centers in 17 provinces. Providers were physicians (N = 41) and nurse-midwives (N = 58), predominantly female (66%).

Prenatal Poster

Distribution of the prenatal poster failed to improve the quality of care. Two sets of data were used to assess the effects: the observations by simulated clients and the analyses of clinic histories. Two groups of SDPs were considered: those assigned to the Reproductive Health Care Guidelines (control) and those assigned to the job aids treatment (experimental). Within each group, two types of providers were differentiated: those who had been trained directly in

Quito, Guayaquil, or Cuenca (Direct Training) and those expected to have been trained by the trained providers at their SDPs (Indirect Training). None of the differences between the groups or between providers within the groups were significant. However, a systematic difference was observed according to the source of the assessment: the revision of clinic histories revealed a higher rate of expected behaviors being performed by the provider. This may be explained by the fact that 22 essential items of prenatal care were considered in the revision of clinic histories whereas the observations by simulated clients encompassed as many as 52 items, some of which were less important.

Table 1. *Results concerning the quality of the prenatal care measured as the percentage of provider expected behaviors that were observed*				
SOURCE	GROUPS			
	Guidelines (N = 49)		Job Aid (N = 51)	
	Direct Training	Indirect Training	Direct Training	Indirect Training
Simulated Client	45.75	41.06	42.06	40.06
Clinic History	56.92	56.25	52.33	56.79

The failure of the distribution of the poster to improve the quality of care may be attributed to several factors that may have contributed simultaneously to cause this effect. The simulated clients observed that very few providers paid attention to the poster as they interacted with the simulated patient. In one case, the client could look at the poster but the provider could not since it was placed on the wall behind the provider's chair. On the other hand, interviews carried out by field supervisors with providers at the SDPs revealed that whereas 100% of the providers had received the Guidelines, only 40% had had access to the prenatal poster. In some places, the poster had been received but had not been pasted or hanged on a wall.

ALGOFLIP

The results concerning the FP/RH algorithmic flipchart were very different. The providers of the experimental group showed a significantly higher quality of care level than those who had received only the Guidelines ($F = 7.02$, $df = 98$, $p < .01$). However, those in the experimental group who were expected to have received indirect training on the use of ALGOFLIP had a level of quality similar to the providers belonging in the control group (Guidelines; see Table 2).

Table 2. *Results concerning the quality of FP/RH care measured as the percentage of provider expected behaviors that were observed, by type of treatment*				
SOURCE	GROUPS			
	Guidelines (N = 49)		Job Aid (N = 51)	
	Direct Training	Indirect Training	Direct Training	Indirect Training
Simulated Client	17.11	15.74	26.98	18.5

Only 39% of the experimental group providers used ALGOFLIP during the interaction with the simulated clients, and those who used it showed the highest levels of quality, whether they had been trained directly or indirectly (see Table 3).

Table 3. *Results concerning the quality of FP/RH care measured as the percentage of provider expected behaviors that were observed, by use of ALGOFLIP*				
SOURCE	USE OF ALGOFLIP			
	Yes (N = 14)		No (N = 36)	
	Direct Training	Indirect Training	Direct Training	Indirect Training
Simulated Client	39.6	34.65	21.00	13.74

Feedback to Job Aid Development

Decisions about the instruments did not originate in these final results of the study but were based on preliminary findings with smaller numbers of cases, yet available early enough (see León, 1998, Figure 8). According to these earlier results, whereas the prenatal poster showed no effects, ALGOFLIP seemed to cause improvements on providers trained directly ($p < .14$). The result might have been more consistent had more providers used the job aid during the consultation with the simulated client: only one in four did it. (This suggests that as time passed, more providers used ALGOFLIP until reaching the 39% of the final result.) Nevertheless, the preliminary findings revealed that providers (either trained directly or in cascade) who used ALGOFLIP during the consultation showed significantly higher quality of care scores than those who did not ($p < .00$), suggesting that the instrument was useful but more work was needed to motivate providers to use it. (The same providers showed no significant differences in the quality of prenatal care.This allowed the investigators to attribute the observed differences in the quality of family planning and gynecological health services to ALGOFLIP and not to traits of the providers.)

Final Version of Instruments

At a follow-up workshop in Quito (September 17-18), providers were asked to help the Ministry understand why the use of ALGOFLIP had been so infrequent. They said that training had been too short (in fact, one day on substantive issues) and they still felt unskilled in its use. The second most important reason was that they considered the job aid to take too much of their time to assist the user (e.g., one who came for family planning) in areas not requested by the client (e.g., gynecological care), or to go to excessive detail even within a single area (e.g., give too much information about the chosen method). With respect to the prenatal poster, the providers restated that they had felt unskilled, and added that the poster's size and, particularly, its letter sizes, were too small to be easily readable. Finally, they opened new debates on very specific technical issues.

At the same meeting, users recruited from local health centers were exposed to ALGOFLIP and made a number of suggestions concerning graphic design. Finally, they exchanged opinions with the providers concerning the the fact that the provider was following the job aid guidelines. A majority of users had not noticed it. When the assistance was revealed, and contrary to the hypothesis of a majority of the providers, who expected the clients would lose technical respect for the provider, most users found natural (and even considered it an

evidence of a more serious professional attitude) to recur to a job aid. The shared conclusion by a majority of providers was that ALGOFLIP could be used either (a) concealing the provider's dependence on the job aid or rather (b) opening it on the table and sharing it with the client.

The users also provided comments on the 14 pamphlets produced (which concerned gynecological health, combined oral methods, minipill, condom, spermicides, LAM, rhythm, Billings, Depo-Provera, two-hormones injectables, Cooper-T, Norplant, tubal ligation, vasectomy). Finally, thge providersd made a number of recommendations to improve the posters on obstetric emergencies and prerinatal care.

Thus, the instruments underwent further changes. ALGOFLIP offered branches for providers willing to spend all the needed and providers with little time available, the size of the posters and their letters was increased, etc. Finally, the Ministry received copies of each instrument that allowed them to initiate their national distribution.

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