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PROJECT-IMPLICATIONS FOR PROGRAM STRATEGY

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PREFACE

The Cholera Research Laboratory (CRL) operates under a bilateral project agreement between the governments of Bangladesh and the United States of America. Research activities of CRL center on the interrelationships between diarrheal disease, nutrition, fertility and their environmental determinants. CRL issues two types of papers: scientific reports and working papers which demonstrate the type of research activity currently in progress at CRL. The views expressed in these papers are those of authors and do not necessarily represent views of Cholera Research Laboratory. They should not be quoted without the permission of the authors.

ABSTRACT

In October, 1975, the Cholera Research Laboratory in collaboration with the Ministry of Health and Population initiated a simple but extensive house-to-house distribution program of non-clinical methods of contraception (oral pills and condom) in 150 villages (125,000 population) of the Matlab Surveillance Area (MSA). The remaining 84 villages (135,000 population) serviced by the regular Government program, was the control group. The specific objectives of this program were to assess a household delivery system of oral contraceptives and condoms in Rural Bangladesh in terms of: a) feasibility of organizing and implementing such a delivery system; b) total demand for these contraceptives; and c) demographic impact.

The baseline KAP survey suggested that while modest, there exists a significant demand for contraception in this rural area. Three months after contraceptive distribution was operationalized, 17.1% of the eligible women claimed to be using oral pills. After 18 months of program effort, the prevalence of oral pill use has declined to 8.7%. The corresponding prevalence rate for use of all methods in the program village were 18% and 13% respectively. The declining prevalence rates were due to both declining rates of new acceptors and briefer rates of method continuation over time. The rate of pill acceptance declined from 24% to 2% 18 months later. Oral pill continuation rates similarly declined with each successive cohort of acceptors.

It seems clear therefore, the provision of a full range of clinical and non-clinical fertility control services will be required to fully meet the existing contraceptive demand. Furthermore, to adequately deliver these services and provide the critical support to maintain use a cadre of well-trained and motivated village level workers is required. These workers should deliver other preventive services related to maternal and child health to fully meet the need for reproductive health in the population.

INTRODUCTION

The contraceptive inundation approach to family planning has been defined as "systematic efforts, usually made through door to door canvass of a geographic area by less skilled para-medical personnel for distribution of contraceptive supplies free of charge without medical prescription to each and all of the target childbearing age women in the area, regardless of their expressed readiness to practice family planning". The crucial point is to make contraceptive supplies plentifully available and easily obtainable with minimum initiative on the part of the recipients. Given the contraceptive, in hand, it is hypothesized that many recipients would be induced to try them and such initial trial would gradually lead to an established contraceptive behavior, resulting in a significant fertility reduction in the area.

In an effort to assess the feasibility of such an approach in Rural Bangladesh, the Cholera Research Laboratory (CRL) in collaboration with the Ministry of Health decided to embark on the Contraceptive Distribution Project in October, 1975. Three principal issues were addressed by this project which are of vital concern to the entire family planning effort.

1. Can contraceptives be effectively distributed to women in Rural Bangladesh using a simple but intensive distribution system? Many of the currently used delivery systems are reliant on clinical facilities and highly trained staff. If such elaborate systems can be successfully circumvented, the savings to family planning programs would be considerable.
2. What is the maximum use in rural Bangladesh when all women of reproductive age are given access to pills and condoms? One of the major problems in Bangladesh and other countries has been adequate availability of contraceptives through the government network of family planning clinics and field workers. Very limited supplies necessarily result in low levels of contraceptive use. This project should provide a bench-mark for the upper limit that could be strived for through a non-clinical distribution system.
3. What is the demographic impact that can be expected from a non-clinical distribution system? The CRL surveillance system provides a unique opportunity to compare the fertility rates in a study area with a control area. This paper will not address this issue.

BACKGROUND

The Cholera Research Laboratory has operated a field station in Matlab Thana (about 50 miles southeast of Dacca) since 1963. Epidemiological studies, cholera vaccine field testing and demographic research have been the primary activities. Since 1966 the continuous registration of births, deaths, emigrations, and immigrations has developed a substantial and perhaps unique demographic data base..

The CRL Matlab surveillance area consists of 234 villages in which approximately 260,000 rural Bangladeshis resided in 1975. Vital registration has existed since 1966 in 135 of the villages and since 1968 in the remainder. Over 80% of the population are Muslims. The population is largely agricultural. Literacy is low. Only 13.4 percent of the males beyond 5 years of age and 3.2 percent of the females have more than five years of schooling. Fully 56 percent of males and 74.3 percent of females have no formal schooling at all.

The Matlab study area was divided into two geographically and culturally similar divisions. The contraceptive distribution area consisted of 150 villages with a total number of 23,000 eligible women. The other part of the area with 84 villages served as the control where existing family planning services are nominal. The eligible women in this area numbered 21,000.

Field Operations

The basic field worker in vital events registration is a lady village worker (LVW). About 15% are traditional birth attendants. LVWs are recruited to work in their own village where they cover an average of 200 households which are visited each day. The 285 dais enquire about cases of diarrhea, births, deaths, emigrations, immigrations, and marriages. Although they are illiterate, they know intimately the population they serve and maintain a simple record book in which someone can write the names, dates, and types of event. Their daily contact with each household was deemed significant in carrying out the distribution task.

The Field Assistant (FA) is the next higher level field worker. Field assistants are male high school graduates and they initiate the record keeping for vital events registration. Sixteen field assistants visit each household every two weeks to assess the household composition from the census card kept in each home, and to enquire about births, deaths, migrations and marriages

These male assistants are assisted in their work by the dais who have informed them of the location of new events and who facilitate his entry into the courtyard of conservative Muslim families.

Sanitary inspectors supervise the work of field assistants by performing his task for him in each village once every two months. The four sanitary inspectors have completed technical training, certifying them to give injections and other technical public health orientated activities. Two assistant supervisors supervise sanitary inspectors. One supervisor oversees the assistant supervisors.

Training

The field assistants (FAs) were given three hours of didactic instructions and discussion for the distribution activities. The training program included instructions for taking pills and using condoms i.e. the day of the menstrual cycle that a woman can initiate pill taking, the period after delivery when she should start taking pills, expected side effects, and situational analyses. One day of field training was conducted by having the two men (FAs) (and the dai) working together and checked by the supervisors. This was followed by discussion of the work that evening. Thereafter the FAs worked independently, their efforts being checked each evening by the supervisors and spot-checked in the field to ensure a proper understanding was given to women receiving oral contraceptives.

Training for dais consisted of one afternoon didactic training similar to that given to the FAs and the field experience acquired while accompanying the FA during the house-to-house distribution in the village. The dai was given the responsibility of determining which women were using contraception, correcting mistakes of pill users, counselling women having complaints or side effects, and providing supplies for absentees and continuing users. Following the distribution, all the dais had two additional training sessions in small groups to discuss the handling of side effects and instructions for correcting women who use the pills improperly.

Distribution Phase

The distribution of oral contraceptives started on 9 October, 1975 with eight FAs and 150 dais. In the initial round of distribution the FAs distributed mainly the pills and gave

instructions using the dais as conversation intermediary. In this effort, all women of reproductive age (15-44 years) present in the house were provided with necessary information on the oral pill and were offered supplies. If they agreed to receive the pill, a supply of 6 cycles was given. As the work progressed, the information spread faster and, as a result, comparatively less effort was needed to introduce the concept. In many instances a number of women in the same bari (a collection of 5-6 households sharing a common courtyard, but with separate kitchens; most are blood relations) were given instructions together.

In the subsequent rounds of data collection and distribution, the FAs were gradually withdrawn from the job of actual distribution to a role of supervision of dais, and the dais alone carried out the resupply and distribution work. Dais carried the red plastic bag with contraceptives, instruction sheets, and a small register to record names of clients and quantities supplied. Gradually, the lady with the red bag going round the village households gained a symbolic identity and served as a helpful reminder to the village women to take their pills.

Data Sources

KAP - A KAP survey was conducted immediately before the distribution. The purpose of this survey was to provide benchmark information on knowledge and levels of contraceptive practice in relation to which a changing level of contraceptive behaviour, with its social, psychological, economic, and programmatic correlates could be determined in the future. The sample of 1039 women was almost equally divided in the distribution and control areas.

Prevalence Surveys - Contraceptive prevalence surveys were carried out before the distribution and every three months thereafter. The baseline survey was conducted in October, 1975 and the second one in February, 1976, covering 100% of eligible women in the area. Subsequent quarterly surveys were carried out on a 20% sample. Only six items of information were sought on the first survey. These were: parity, date of last pregnancy termination, menstrual status, current contraceptive use, contraceptive use in the last three months, and the source from which the contraceptives were acquired.

From the date of the census carried out in May, 1974, basic information for all married women of 15-44 years was obtained in the form of a computer print-out. Marital status in the print-outs was updated by the workers and the information identified the target population for the distribution work and the prevalence surveys.

STUDY OBJECTIVES

This paper addresses to the following questions:

1. What did the program accomplish with regard to oral pill acceptance, continuation, and prevalence?
2. What was the level of potential contraceptive demand and practice prior to and following program inception?

A limitation of using Matlab as a study area is the existence of the CRL's health services and strong field structure which is expected to generate a near optional result and may not be easily or cheaply replicated by others.

Over the twelve months of project operation, several papers have been generated (see Appendix I).

RESULTS

The Prevalence Survey

The immediate success of the contraceptive program may be measured by the prevalence rate. In family planning, the prevalence rate has been defined as the number of users at a particular time period as related to the eligible population. The prevalence rate is a composite of the acceptance and continuation rates.

Speidel and Ravenholt (1) pointed out that acceptance and continuation when used separately will not reflect the program impact, e.g. a family planning program may be recruiting many new acceptors, but most of them only for a brief duration, or conversely, the continuation rate might be very high, but only a few acceptors are recruited. Neither programs would generate much demographic impact. Instead, the use of the prevalence rate may be more meaningful.

Table 1 gives the trends in contraceptive prevalence on repeated surveys in a 20% sample in Matlab from October, 1975, to May, 1977. A marked rise from 1 to 18% in prevalence was exhibited in the distribution area, three months following

Table 1
Contraceptive Use/Rate for Married Women 15-44
in the Household Distribution Area

Baseline	Women Contacted	Pills	Condoms	Others	Total	Pills and Condoms
Oct. '75	4583	0.7	0.1	.3	1.1	0.8
2nd Feb. '76	4072	17.1	.4	.5	18.0	17.5
3rd May '76	4157	15.5	.8	.7	17.0	16.3
4th Aug. '76	4141	12.4	1.2	.7	14.3	13.6
5th Nov. '76	4253	10.8	3.1	.9	14.8	13.9
6th Feb. '77	4305	9.3	2.7	1.4	13.4	12.0
7th May '77	4310	8.7	2.4	1.9	13.0	11.1

initial distribution. However, this declined to 13% by May, 1977 - and observation that could be accounted for by a decline in the prevalence of pill use from 17.1% to 8.7% over this time.

Table 2 presents the trend of acceptance rates based on the cumulative number of new acceptors in each of the three month intervals following the baseline survey. The rate is calculated by dividing the users by the residual of the eligible population contacted. In the first three months after initial distribution, 24.4% of the sample women accepted the pills. The next quarter witnessed a sharp reduction of new acceptance rates to 6.3% and the subsequent surveys recorded further declines to 2% by May, 1977.

Examination of the age and parity distribution of acceptors revealed a definite downward trend data in average age and average parity of later acceptors (Table 3). While 42.3% of the acceptors were less than 30 years of age in the first quarter after program implementation, the proportion increased to 64.7% by May, 1977. In a similar manner, only 11.7% of the pill acceptors had less than three children and this percentage increased to 25.5% by the seventh survey.

Table 2

Number of Pill Acceptors and Acceptance Rates in Each Quarter
based on the 20% Sample of Women in the Household
Distribution Area

Three month interval following distribution	New Acceptors	Acceptance Rates*
1	988	24.4
2	197	6.3
3	159	5.4
4	110	3.8
5	37	1.2
6	51	2.0

* Number of cumulative new acceptors in each quarter
divided by the residual eligible women contacted
in the survey.

Table 3

Trend in Mean Age and Parity of Pill Acceptors

	<u>Prevalence Surveys</u>					
	2nd	3rd	4th	5th	6th	7th
Mean Age	30.9	30.8	29.8	28.2	28.5	27.1
% < 30	42.3	44.6	49.1	54.5	48.6	64.7
Mean Parity	5.4	5.0	4.9	4.4	4.6	4.1
% with less than 3 children	11.7	11.7	20.2	20.9	13.5	25.5

Continuation rates were determined separately for each
successive cohort of acceptors. These rates were obtained for
each cohort in each quarterly survey by dividing the number of
current users in the cohort of acceptors by the number of women

contacted from the same cohort*¹ The first cohort, which registered the highest acceptance rate, had less than half still taking the pills after six months, and after a year, the proportion declined to a third (32.3%). For the subsequent cohort, slightly more than a third (37.9%) were still taking the pills after six months and after a year, the proportion went down to 26.3%. (Table 4). The continuation rates of the next cohorts further declined to less than a fourth of the initial.

Comments on Prevalence Surveys

Several factors could be posited for deterioration in both acceptance and continuation and these could be subsumed under three categories: (1) presence of side effects; (2) management of side effects; and (3) psycho-social reasons. Following distribution, several reports were received about women with severe side effects particularly bleeding. Dizziness was the most common complaint which was associated with pill discontinuance. Vomiting was also found to be significantly associated with termination of use.

Another factor that is of importance is the role of the dai. The presence of a woman well known to other villages who is knowledgeable of the management of side effects should be; reassuring to the villagers. However, there were indications that the LVWs or dais had little idea of contraceptive practice in the area or had little interest and understanding of the pills which resulted in many women in the area incorrectly using them - like taking brown pills when white were in order or irregular pill usage.

Another problem that was recognized was the inability to involve the husband in the motivation effort when the decision lies in the husband. Other socio-psychological factors that seemed to have accounted for pill discontinuation were: (a) the ordeal of taking a daily dose and the belief that if a sufficient number is ingested, adequate protection would be conferred, and (b) lack of support and encouragement from family members e.g. physical punishment inflicted by the husband or the mother-in-law's rebuke when the wife suffers from side effects like dizziness and nausea.

*¹ One issue that may be raised would be: how representative would the woman contacted be of the cohort itself? An examination of the continuation rates of women contacted throughout the surveys and those found in each survey revealed no difference in continuation.

Table 4

Percentages of Pill Acceptors Still Continuing Use for Each Successive Cohort of Acceptors

Mos. since Acceptance	Cohort of Acceptors*							
	First Cohort N = 988		Second Cohort N = 197		Third Cohort N = 159		Fourth Cohort N = 110	
	% Contacted in Survey	% Still Using	% Contacted	% Still using	% Contacted	% Still using	% Contacted	% Still using
0 - 3	90.9	57.1	86.3	49.4	91.2	16.6	82.7	33.4
4 - 6	89.5	44.5	92.9	37.9	91.2	15.9	86.3	25.2
7 - 9	93.7	37.6	89.3	34.1	95.0	11.9		
10 - 12	91.4	32.3	90.9	26.3				
13 - 15	90.5	31.3						

* Cumulative number of acceptors in each successive quarter.

The KAP Survey

Measurement of Demand

The rationale for the potential success of the contraceptive distribution approach rests heavily on the assumption of a pre-existing demand for fertility control services. It is felt that adequately meeting an existing demand for contraceptive services is a prerequisite for stimulating additional demands. The KAP survey has been designed to provide an estimate of knowledge and practice of family planning out of which can be derived both a demand for additional children and intention to use contraception. Although some figures may be different from the prevalence surveys as a result of sampling variations and depth of data gathering, the purpose of this survey is simply to estimate the demand. Potential demand for each woman had been estimated by substituting the number of children she has already born from the number she desired. Women for whom this difference is zero or negative (that is, they desire no more children) are considered to be currently needing contraception. Furthermore, women were asked if they could ever consider using contraception and those who wanted more children but indicated that they would use contraception were also considered as potential acceptors. This would be conceptualized by the following scheme:

	No desire for additional children	Desire more children	
Current user	a	b	a + b
Intending to use contraception	c	d	c + d
Not intending to use contraception	e	f	e + f
	a + c + e	b + d + f	a+b+c+d+e+f

In this scheme, a + b are the users and c + d would be considered as the group whose needs have not been met. These are wives who express intention to accept contraception in the future.

A hypothesis of the contraceptive distribution approach is by making contraceptive supplies available in the community, those in group c (desiring no more children and intending to use contraception) would immediately start practising family planning. In

addition, some of those in group d who are sort of ambivalent might start trying the supplies given to them, leading to an established contraception behaviour. Group c and d (intending to use contraception) would be the potential clients or immediate target of this approach. Besides, it is expected that d (desiring more children with no intention to accept) would shift to b (current user requiring more children) and c to a (current user desiring no more children) and that f would shift to e changing the desired family size. The net result is expected to be accelerated fertility decline.

Table 5 presents the distribution of the 524 women in the study area based on the 1975 KAP according to their potential demand for contraception. By the definition of contraceptive need (current use and intention to use contraception), 49.3% of the women were in need of contraception of whom 7.5% were current users (2.4% users of modern methods). Notably, of those who do not desire additional children, less than a third did not intend to use contraception.

The maximum level that one might predict for the prevalence rate with a distribution program would be the sum of the current users (7.5%) plus those who desire no more children and intend to use contraception (17.6%) plus approximately half of those desiring more children (10.6%). This will sum-up to 35.7%. In the prevalence surveys undertaken, following distribution, performance fell short of this predicted maximum demand. The peak in prevalence was achieved 3 months after program inception and the rate obtained (18%) was close to half of the maximum expected.

Within the group that desired no more children, differentials were noted among those not intending to use in the future, those planning to accept, and the current users. Table 6 compares users and non-users, and within the non-user group, the potential acceptors and those who did not intend to use any contraception in the future. The table indicates that non-users who indicated no intention to use any contraception in the future were on the average 3 to 4 years older than the current and potential users. There is no difference, however, in the number of living children, sons, daughters, dead children, and parity. The desired family size of current users was lower than non-users. The sex preference of those who did not intend to use contraception was indicated by the relatively higher proportion wanting more than one son or at least one daughter in this group. Besides, the non-users perceived that their husband would desire a relatively larger number compared to the potential users and current users.

Table 5

1975 Baseline KAP Survey (Contraceptive Distribution Area)
Distribution of Women according to their Desire for
More Children and current use of Contraception

	No desire for additional children		Desire for more children		Total	
	No.	%	No.	%	No.	%
Current Users	25	4.8	14	2.7	39	7.5
No intention to use contraception	61	11.6	205	39.1	266	50.7
With intention to use contraception	92	17.6	127	24.2	219	41.8
	178	(34.0)	346	(66.0)	524	100.0

Marked variation was notable in the knowledge and practice of contraception. While current users had consistently manifested a higher percentage volunteering knowledge of specific methods and previous use of contraception, within the non-user group, the level of knowledge and previous use was higher among the potential users. This might indicate that lack of adequate knowledge can serve as a deterrent factor to the utilization of methods.

Changes in KAP

The success of the project is assessed in some ways by comparing the KAP survey in October, 1975, with that of May, 1977, for the study areas. Table 7 shows the changes over the 20 month period. A slight reduction in average desired family size was noted from 5 to 4. Knowledge of contraception rose from 63% to 92%. Likewise, spontaneous knowledge of the pill increased from 28% to 83%. Ever use of pills rose from 3% to 26% but current use increased only from 1 to 6%. This indicates that while wives have tried the pills at one time, sustained use could not be achieved. As assessed by intent to ever use, demand did not change much over the 20 month period of the project.

Table 6

Distribution of Women Who Want No More Children According to
Contraceptive Use Status and Selected
Characteristics, Matlab, 1975

<u>Characteristics</u>	Non Users		Current Cases (25)
	With Intention (92)	No Intention (61)	
Mean Age	33.2	36.8	33.6
Mean No. of living sons	2.7	2.6	2.7
Mean No. of living daughters	2.5	2.5	2.0
Mean No. of living children	5.2	5.1	4.7
Mean No. of Children Ever Born	6.5	6.9	6.4
Percent wanting at least 1 son	89.0	89.9	80.9
Percent wanting more than 1 son	48.4	52.5	25.5
Perceived preferred Family size of husband	4.4	4.7	4.0
Desired Family size	4.5	4.5	3.9
Percent with knowledge of contraception	81.3	67.2	100.0
% with spontaneous knowledge of			
Pills	45.2	23.2	66.0
IUD	20.0	12.4	34.0
Condom	7.1	4.0	12.8
% who previously used			
Pills	1.1	0.5	3.9
Condoms	3.2	-	8.5

Table 7

CONTRACEPTIVE DISTRIBUTION AREA
Changes in Knowledge, and Practice of Contraception
October 1975 and May, 1977

	KAP I October 1975	KAP II May 1977	Change
Desired family size (Mean)	4.5	3.8	- .7
Knowledge of Contraception (%)	62.8	91.6	+ 28.8
Spontaneous knowledge			
Pill	27.5	82.5	+ 55.0
Condom	5.2	36.7	+ 31.5
Ever Use			
Pill	2.7	25.5	+ 22.8
Condom	1.1	4.8	+ 3.7
Current Use			
Pill	1.0	6.2	+ 5.2
Condom	.2	1.2	+ 1.0
Current Use (all methods)	7.4	9.4	+ 2.0
Would Ever use	41.8	44.7	+ 2.9

SUMMARY

Our experience to date in rural Bangladesh clearly defines both the achievements and limitations of a strategy of saturating communities with modern contraceptives in rural Bangladesh. Not surprisingly, the major achievement is an increase in the level of knowledge by the community of the modern technologies. Also, given that there is a pre-existing demand for contraception, one would expect a saturation effort to rapidly "fill up" this demand. This, indeed, occurred to a great extent as evidenced by the high rate of recruitment of new acceptors in the first three months.

This experience does confirm the hypotheses that there is a latent demand for contraception and that a house to house distribution project can rapidly saturate the requirements for contraception in the community.

A corollary thesis of such a program, however, is that having met the current demand the project would generate additional demand through availability of a knowledge about the modern technologies. If this hypothesis were true, one would anticipate that acceptance rates would have continued high in the subsequent months. In fact, acceptance rates dropped dramatically after the first few months indicating that the saturation approach failed to generate much additional demand. This was independently confirmed by the second KAP survey 20 months after the project begun which indicated that there was a slight change in the percent of the population that indicated they would ever use contraception. This was in spite of the fact that there was a dramatic increase in the percentage with knowledge about the new contraceptive methods.

As Ravenholt has indicated, the success of a contraceptive program is not adequately measured by the number of acceptors, but by the prevalence of use, since the prevalence is a function of both the acceptance rates and the continuation rates. By this standard there must be a mixed judgement on what success was achieved by this project. Clearly, the prevalence of use of the modern contraceptive methods was significantly higher 20 months after the project was initiated. This is seen both in the prevalence surveys as well as in the KAP surveys. Both surveys also indicate, however, that the vast majority of village women who tried the new technologies have had a great deal of difficulty in sustaining practice of these methods once they have initiated use. In this context, the experience with the oral contraceptive in this population seems to be paralleling earlier experience with the intra-uterine device.

With reference to the overall impact of the program, a comparison of the two KAP surveys suggest there was only a modest change in current use of contraception from 7.4% prior to the project to 9.4% after 20 months. There was, however, a marked shift among the users to modern methods (pills and condoms). More detailed demographic analysis will be required to determine if this shift in technologies by the users will result in a detectable and significant effect on fertility.

Future Directions

A modified and extended contraceptive distribution project is being implemented wherein the intensive household distribution project is to be improved substantially through the provision of a wider array of contraceptive services and simultaneous provision of selected maternal and child health services. The modified delivery system will cover a population of about 80,000 in the demographic surveillance area - 40,000 from the distribution area and 40,000 from the control area. New female village workers numbering 80 at the village level will be employed and trained to deliver MCH-FP services. A centralized clinic facility will be established to provide the full-range of medical and surgical fertility control services. The medical back-up of the clinic will be provided by a qualified physician and trained para-professional.

The new strategy is expected to meet the problems expressed in previous sections by more fully meeting the latent demand for contraception, sustaining use of contraception through the provision of surgical and back-up clinical services, and the generation of new demand for contraception.

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APPENDIX I.

Contraceptive Distribution Project

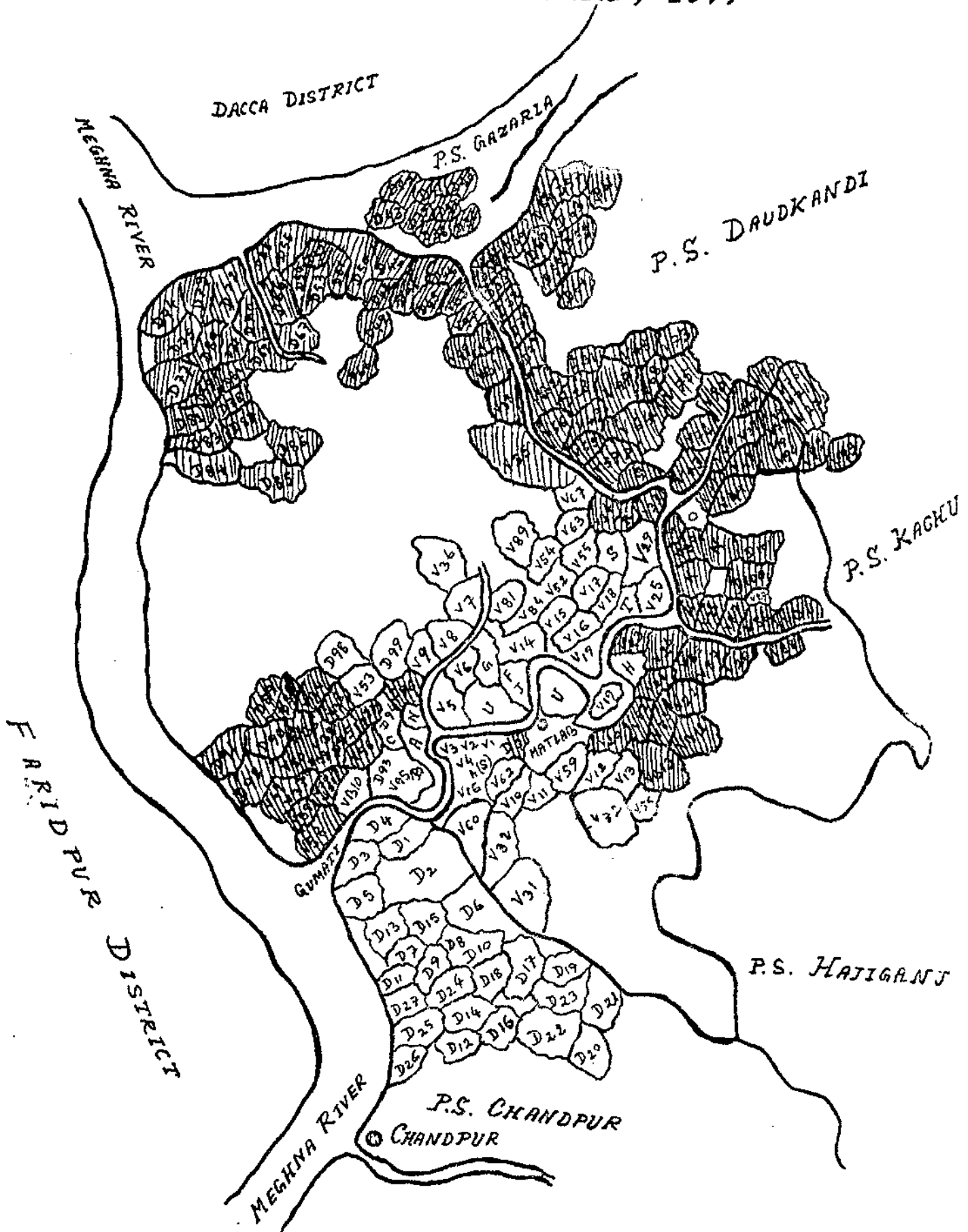
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