

JAYAWIJAYA
WOMEN AND THEIR CHILDREN'S HEALTH
(WATCH)
PROJECT

KANGGIME EXTENSION
1998 – 2000

BASELINE & MIDTERM SURVEY RESULTS

DATA COLLECTION, COMPILATION, ANALYSIS & PREPARATION OF RESULTS

BY

DR GABRIEL YURISTIANTI ANDAYANI (PROJECT MANAGER)

DR. DERI MARIA SIHOMBING (HEALTH COORDINATOR)

SUSANA SRINI (GAD COORDINATOR)

MARTA KOMBONG (GAD ASSISTANT)

NINI DERITANA (NUTRITIONIST)

STUDENTS OF THE WAMENA NURSE TRAINING SCHOOL (FIELD DATA COLLECTION TEAM)

&

Robert J. Hewat (Translation & Analytical Review)

TABLE OF CONTENTS

| | |
|------------------------|------|
| LIST OF FIGURES | IV |
| LIST OF TABLES | VIII |
| LIST OF MAPS | IX |
| EXECUTIVE SUMMARY..... | 1 |

SECTION I.

METHODS & METHODOLOGY

| | |
|--|----------|
| 1 SURVEY METHODOLOGY AND RATIONALE..... | 2 |
| 1.1 PRIMARY PURPOSE..... | 2 |
| 1.2 SECONDARY FUNCTIONS..... | 2 |
| 2. SURVEY METHODS | 3 |
| 2.1 THE SURVEY TEAM..... | 3 |
| 2.2 FIELD DATA COLLECTION | 3 |
| 2.3 PRIMARY DATA COLLECTION..... | 3 |
| 2.4 SECONDARY DATA SOURCES | 5 |
| 2.5 SAMPLING METHODS..... | 5 |
| 2.6 DATA ANALYSIS & RESULT WRITING | 7 |
| 3. LESSONS LEARNED FROM CONDUCTING THE SURVEYS..... | 8 |
| 3.1 PREPARATION AND FIELD TESTING OF SURVEY QUESTIONNAIRES..... | 8 |
| 3.2 THE SURVEY TEAM..... | 8 |
| 3.3 RELIANCE ON AIR TRANSPORT..... | 8 |
| 3.4 TOO MANY INDICATORS AND QUESTIONS..... | 8 |
| 3.5 DOUBLING UP OF QUESTIONNAIRES..... | 8 |
| 3.6 POOR DEMOGRAPHIC DATA | 9 |
| 3.7 KMSCARDS BASED EVALUATIONS | 9 |
| 3.8 COMBINING SURVEY TRIPS WITH OTHER INTERVENTIONS..... | 9 |
| 3.9 PROBLEMS WITH GENDER SURVEY METHODS..... | 9 |
| 3.10 PARTICIPATORY LEARNING AND ACTION (PLA) AS A SURVEY TOOL..... | 9 |

SECTION II

THE TARGET AREAS - KANGGIME AND KEMBU-MAMIT SUB-DISTRICTS

| | |
|---|-----------|
| 1 GEOGRAPHY, ENVIRONMENT AND ECOLOGY..... | 10 |
| 1.1 MAMBERAMO LAKES PLAIN ECOLOGICAL ZONE..... | 13 |
| 1.2 FOOTHILLS / LOWER MONTANE ECOLOGICAL ZONE..... | 14 |
| 1.3 TOLI RIVER VALLEY ECOLOGICAL ZONE..... | 14 |
| 1.4 UPPER MONTANE / SUB-ALPINE ECOLOGICAL ZONE..... | 15 |
| 1.5 CLIMATIC PATTERNS AND ENSO EFFECTS | 16 |
| 1.6 EARTHQUAKES AND LANDSLIDES..... | 17 |
| 2. HISTORY OF CONTACT..... | 18 |
| 2.1 PRECONTACT HISTORY | 18 |
| 2.2 FIRST CONTACTS | 18 |
| 2.3 MISSIONS..... | 21 |
| 2.4 GOVERNMENT..... | 22 |
| 2.5 WORLD VISION IN KANGGIME & KEMBU MAMIT..... | 23 |
| 3 THE HUMAN POPULATION..... | 24 |
| 3.1 POPULATION STATISTICS..... | 24 |
| 3.2 SETTLEMENT PATTERNS..... | 29 |

| | | |
|------------|--|-----------|
| 4 | LANGUAGE, CULTURE AND TRADITION..... | 30 |
| 4.1 | LANI / WESTERN DANI..... | 30 |
| 4.2 | DOUTAI, WARI, KAIY, TAWORTA AND WESTERN DUVLE..... | 43 |
| 5 | LOCAL GOVERNMENT AND ADMINISTRATION..... | 43 |
| 5.1 | KECAMATAN / SUB-DISTRICT LEVEL GOVERNMENT AND ADMINISTRATION..... | 44 |
| 5.2 | DESA / VILLAGE LEVEL GOVERNMENT AND ADMINISTRATION..... | 44 |
| 6 | INFRASTRUCTURE..... | 45 |
| 6.1 | TRANSPORTATION INFRASTRUCTURE..... | 45 |
| 6.2 | COMMUNICATIONS INFRASTRUCTURE..... | 47 |
| 6.3 | POWER, WATER AND SANITATION INFRASTRUCTURE..... | 47 |
| 6.4 | ARCHITECTURAL INFRASTRUCTURE..... | 47 |
| 7. | EDUCATION FACILITIES AND SERVICES..... | 48 |
| 7.1 | PRIMARY EDUCATION..... | 48 |
| 7.2 | SECONDARY EDUCATION & TERTIARY EDUCATION..... | 49 |
| 8. | THE LOCAL ECONOMY..... | 51 |
| 8.1 | GARDENING..... | 51 |
| 8.2 | HUNTING AND GATHERING..... | 61 |
| 8.3 | CROP DIVERSIFICATION..... | 62 |
| 8.4 | COFFEE & OTHER PLANTATION CROPS..... | 65 |
| 8.5 | ANIMAL HUSBANDRY..... | 66 |
| 8.6 | MARKETS..... | 72 |
| 9. | COMMUNITY DEVELOPMENT GROUPS..... | 80 |
| 10. | GENDER ANALYSIS..... | 81 |
| 10.1 | DUALISM, GENDER CONSTRUCTION AND COMPLIMENTARITY..... | 81 |
| 10.2 | BRIDEPRICE OR BRIDEWEALTH & THE CONTRACTING OF MARRIAGES..... | 82 |
| 10.3 | PATRILINEALITY, POLYGyny, THE EXTENDED FAMILY AND VIRILOCAL SETTLEMENT PATTERNS..... | 83 |
| 10.4 | THE DIVISION OF LABOUR & THE HEAVY WORKLOAD OF WOMEN..... | 84 |
| 10.5 | FEMALE POLLUTION & TABOOS..... | 85 |
| 10.6 | THE ROLE OF WOMEN AS MEDIATORS OF CHANGE..... | 85 |

SECTION III

RESULTS OF THE BASELINE SURVEY HEALTH SECTION

| | | |
|-----------|---|------------|
| 1. | HEALTH SERVICES..... | 86 |
| 1.1 | SUB-DISTRICT & VILLAGE LEVEL HEALTH SERVICES IN IRIAN JAYA..... | 86 |
| 1.2 | HEALTH FACILITIES & HEALTH WORKERS IN THE TARGET AREAS..... | 88 |
| 2. | HEALTH CONDITIONS EXPERIENCED BY THE TARGET COMMUNITY..... | 92 |
| 2.1 | COMMUNITY NUTRITIONAL STATUS..... | 92 |
| 2.2 | MATERNAL AND INFANT HEALTH..... | 95 |
| 2.3 | THE COMMUNITY'S UNDERSTANDING OF THE THREE MAIN DISEASE DIARRHEA, PNEUMONIA AND MALARIA..... | 105 |
| 2.4 | SANITATION AND LATRINE UTILITY..... | 113 |
| 2.5 | WILLINGNESS AND ABILITY TO PAY HEALTH SERVICE FEES..... | 115 |
| 3. | HEALTH SERVICES..... | 117 |
| 3.1 | IMMUNISATION..... | 117 |
| 3.2 | HEALTH INFORMATION SYSTEM (RECORDING & REPORTING)..... | 119 |
| 3.3 | ANTENATAL & PERINATAL SERVICES..... | 125 |
| 4 | CASE FINDINGS..... | 129 |
| 4.1 | MANAGEMENT OF THE KANGGIME AND MAMIT COMMUNITY HEALTH CENTRES (<i>PUSKESMAS</i>)..... | 129 |
| 4.2 | THE QUALITY OF HEALTH WORKERS AND HEALTH CADRES..... | 131 |

SECTION IV.

RESULTS OF THE MID-TERM SURVEY

COMMUNITY DEVELOPMENT & GENDER SECTION

| | |
|---|------------|
| 1. RESULTS OF THE GROUP QUESTIONNAIRES..... | 136 |
| 1.1 GROUP ORGANISATION | 136 |
| 1.2 APPLICATION OF NEWLY INTRODUCED TECHNIQUES AND TECHNOLOGIES | 139 |
| 1.3 INCOME GENERATING ACTIVITIES | 145 |
| 1.4 COMMUNITY BASED HEALTH INITIATIVES | 149 |
| 2. TRANSFER SKILL / TECHNOLOGY | 150 |
| 2.1 TRANSFER SKILL/TECHNOLOGY..... | 150 |
| 2.2 THE LOCAL ECONOMY AND INCOME GENERATION..... | 155 |
| 2.3 COMMUNITY HEALTH INITIATIVES..... | 160 |
| 3. DEVELOPMENT OF CIVIL INSTITUTIONS WITHIN THE COMMUNITY..... | 161 |
| 4. CONTINUITY / SUSTAINABILITY OF ACTIVITIES | 162 |
| 5. GENDER PROFILE..... | 162 |
| 6. GROUP STATUS | 162 |

SECTION V.

RESULTS OF THE MID-TERM SURVEY

HEALTH SECTION

| | |
|---|------------|
| 1 EDUCATION AND REARING PRACTICES..... | 164 |
| 1.1 WOMEN'S EDUCATION STATUS..... | 164 |
| 1.2 CHILD REARING PRACTICES..... | 166 |
| 2. BREASTFEEDING PRACTICES | 167 |
| 2.1 LENGTH AND FREQUENCY OF BREASTFEEDING | 167 |
| 2.2 COLOSTRUM..... | 169 |
| 3. AWARENESS & UNDERSTANDING OF HEALTH ISSUES & UTILISATION OF HEALTH SERVICES | 170 |
| 3.1 DIARRHEA..... | 170 |
| 3.2 UPPER RESPIRATORY TRACT INFECTIONS..... | 173 |
| 3.3 MALARIA..... | 175 |
| 4. IMMUNISATION AND CHILD GROWTH MONITORING..... | 180 |
| 4.1 KMSCARDS AND IMMUNISATION COVERAGE | 180 |
| 4.2 RESPONDENTS' KNOWLEDGE REGARDING THE TYPES OF IMMUNISATION..... | 184 |
| 5. ANTE NATAL CARE..... | 185 |

ANNEXES

| | |
|--|-----|
| ANNEXE I | |
| DATA ON HEALTH FACILITIES, WORKERS AND CADRES IN KANGGIME SUB-DISTRICT..... | 187 |
| ANNEXE II. | |
| DATA ON HEALTH FACILITIES, WORKERS AND CADRES IN KANGGIME SUB-DISTRICT | 212 |
| ANNEXE III. | |
| CARGOISTIC MOVEMENTS AND THE MULIA DANI..... | 236 |
| ANNEXE IV. | |
| LANI COSMOLOGY..... | 237 |

| | |
|--|-----|
| ANNEXE V. | |
| GLOSSARY OF TERMS & ABBREVIATIONS..... | 263 |
| ANNEXE VI. | |
| REFERENCES AND FURTHER READING..... | 270 |

LIST OF FIGURES

| | |
|---|-----|
| FIGURE 1. | |
| FAMILY SIZES IN KANGGIME AND KEMBU-MAMIT SUB-DISTRICTS | 28 |
| FIGURE 2. | |
| CROSS SECTION OF THE TOLI VALLEY AT KUTTIME | 29 |
| FIGURE 3. | |
| PLAN OF A TYPICAL LANI SILIMO | 32 |
| FIGURE 4. | |
| CUT-AWAY DIAGRAM SHOWING LANI MEN'S HOUSE (HONAI) CONSTRUCTION | 33 |
| FIGURE 5. | |
| EXTENT OF CROP DIVERSIFICATION IN KANGGIME AND KEMBU-MAMIT SUB-DISTRICTS | 63 |
| FIGURE 6. | |
| AVERAGE NUMBER OF RECENTLY INTRODUCED LIVESTOCK OWNED BY RESPONDENTS | 68 |
| FIGURE 7. | |
| LANI SOCIO-ECONOMIC STRUCTURE ACCORDING TO THE RESULTS OF COMMUNITY WEALTH RANKING EXERCISE IN DESA WORAGA, KEMBU-MAMIT SUB-DISTRICT & CONVENTIONAL "POVERTY PYRAMID" MODEL OF RURAL SOCIAL STRUCTURES | 77 |
| FIGURE 8. | |
| NUTRITIONAL STATUS OF INFANTS UNDER FIVE YEARS OLD IN KANGGIME SUB-DISTRICT | 91 |
| FIGURE 9. | |
| ESTABLISHMENT AND UTILIZATION OF NUTRITION GARDENS IN THE RESPONDENTS YARDS | 93 |
| FIGURE 10. | |
| RESPONDENTS' ATTITUDES TOWARDS ANTE-NATAL EXAMINATIONS | 95 |
| FIGURE 11. | |
| WILLINGNESS TO USE MINERAL SUPPLEMENTS, MALARIA PROPHYLAXIS AND WORM TREATMENT DURING PREGNANCY | 96 |
| FIGURE 12. | |
| AWARENESS OF THE PURPOSE AND ADVANTAGES OF TETANUS TOXOID IMMUNISATION FOR PREGNANT WOMEN | 97 |
| FIGURE 13. | |
| DAILY DIET FREQUENCY FOR PREGNANT WOMEN | 98 |
| FIGURE 14. | |
| RESPONDENTS' PARTICIPATION IN POSYANDU CLINICS & POSSESSION OF INFANT GROWTH RECORD CARDS (KMS) | 101 |
| FIGURE 15. | |
| INFANT AGE AT THE COMMENCEMENT OF WEANING | 102 |
| FIGURE 16. | |
| TYPES OF WEANING FOODS GIVEN TO INFANTS | 103 |
| FIGURE 17. | |
| DAILY FREQUENCY OF INFANT FEEDING | 104 |
| FIGURE 18. | |
| PREVALENCE OF THE THREE MAJOR DISEASES IN KEMBU-MAMIT SUB-DISTRICT | 105 |
| FIGURE 19. | |
| RESPONDENTS AWARENESS OF THE SIGNS / SYMPTOMS & CAUSES OF DIARRHOEA | 105 |
| FIGURE 20. | |
| COURSES OF ACTION TAKEN IN CASES OF DIARRHOEA | 106 |
| FIGURE 21. | |
| FEEDING PRACTICES FOR BABIES AND INFANTS SUFFERING FROM DIARRHEA | 106 |
| FIGURE 22. | |
| RESPONDENTS AWARENESS OF THE SIGNS / SYMPTOMS & CAUSES OF MALARIA | 108 |
| FIGURE 23. | |
| COURSES OF ACTION TAKEN IN CASES OF MALARIA | 109 |
| FIGURE 24. | |

| | |
|---|-----|
| RESPONDENTS AWARENESS & PRACTICE OF MALARIA PREVENTION | 110 |
| FIGURE 25. RESPONDENTS AWARENESS OF THE SIGNS / SYMPTOMS & CAUSES OF PNEUMONIA / RESPIRATORY TRACT INFECTIONS | 111 |
| FIGURE 26. COURSES OF ACTION TAKEN IN CASES OF PNEUMONIA / RESPIRATORY TRACT INFECTIONS | 112 |
| FIGURE 27. HOUSEHOLD ACCESS TO LATRINES | 112 |
| FIGURE 28. TYPES OF LATRINES ACCESSIBLE TO RESPONDENTS | 113 |
| FIGURE 29. UTILISATION OF LATRINES | 113 |
| FIGURE 30. SOURCES OF DRINKING WATER IN KANGGIME AND KEMBU-MAMIT SUB-DISTRICTS | 114 |
| FIGURE 31. PASTEURISATION OF DRINKING WATER | 115 |
| FIGURE 32. MEANS OF PAYMENT FOR HEALTH SERVICES | 115 |
| FIGURE 33. RESPONDENTS AWARENESS OF THE PRICE OF MEDICATION | 115 |
| FIGURE 34. REALISATION OF IMMUNISATION TARGETS IN KEMBU-MAMIT SUB-DISTRICT | 117 |
| FIGURE 35. PROVIDERS OF MEDICAL ASSISTANCE FOR INFANT MORTALITY CASES IN KANGGIME & KEMBU-MAMIT SUB-DISTRICTS OCCURRING BETWEEN AUGUST 1997 AND AUGUST 1998 | 120 |
| FIGURE 36. DIAGNOSED CAUSES OF INFANT MORTALITY IN KANGGIME & KEMBU-MAMIT SUB-DISTRICTS FOR THE 12 MONTHS BETWEEN AUGUST 1997 & AUGUST 1998 | 121 |
| FIGURE 37. AGES OF DEATH FOR INFANT MORTALITY CASES IN KANGGIME & KEMBU-MAMIT SUB-DISTRICTS FOR THE 12 MONTHS BETWEEN AUGUST 1997 & AUGUST 1998 | 121 |
| FIGURE 38. REALISATION OF TARGET COVERAGE FOR ANTENATAL EXAMINATIONS | 124 |
| FIGURE 39. REALISATION OF TARGET COVERAGE FOR TETANUS TOXOID IMMUNISATIONS FOR PREGNANT WOMEN .. | 125 |
| FIGURE 40. NUMBER OF PREGNANCIES IN KANGGIME & KEMBU-MAMIT WHICH WERE IDENTIFIED AS BEING HIGH RISK DURING 1998 | 126 |
| FIGURE 41. IDENTIFICATION OF HIGH RISK PREGNANCIES | 126 |
| FIGURE 42. DELIVERIES ASSISTED IN THE PUSKESMAS | 127 |
| FIGURE 43. BREAKDOWN OF PEOPLE ASSISTING DELIVERIES IN THE KANGGIME & KEMBU-MAMIT PUSKESMAS ... | 127 |
| FIGURE 44. ESTABLISHMENT AND ACTIVITY OF GROUP ORGANISING COMMITTEES | 136 |
| FIGURE 45. GROUP ACTIVITY | 136 |
| FIGURE 46. PERCEIVED BENEFIT OF GROUP ACTIVITIES | 137 |
| FIGURE 47. GROUP MEETINGS | 138 |
| FIGURE 48. LEISA TRAINING | 138 |
| FIGURE 49. ESTABLISHMENT OF LEISA DEMPLOTS | 139 |

| | |
|---|-----|
| FIGURE 50. GROUPS THAT HAVE ESTABLISHED EXAMPLES OF CAGES FOR DIFFERENT TYPES OF LIVESTOCK | 142 |
| FIGURE 51. APPLICATION OF APPROPRIATE TECHNOLOGIES FOR POST HARVEST PROCESSING | 143 |
| FIGURE 52. COMPARISON OF THE APPLICATION OF APPROPRIATE TECHNOLOGIES FOR POST HARVEST PROCESSING IN KANGGIME & KEMBU-MAMIT SUB-DISTRICTS | 144 |
| FIGURE 53. MULTIPLICATION OF PLANT PROPAGULES PROVIDED TO THE COMMUNITY DEVELOPMENT GROUPS | 146 |
| FIGURE 54. MULTIPLICATION OF BREEDING STOCK PROVIDED TO THE COMMUNITY DEVELOPMENT GROUPS | 146 |
| FIGURE 55. GROUPS' DEVELOPMENT OF LONG TERM/TREE CROPS | 147 |
| FIGURE 56. OTHER ECONOMIC ACTIVITIES | 147 |
| FIGURE 57. GROUPS' POSSESSION OF A GROUP FUND | 148 |
| FIGURE 58. COMMUNITY BASED HEALTH INITIATIVES | 148 |
| FIGURE 59. USE OF CAGES IN CHICKEN RAISING | 149 |
| FIGURE 60. USE OF CAGES IN RABBIT RAISING | 150 |
| FIGURE 61. USE OF CAGES IN PIG RAISING | 150 |
| FIGURE 62. REVEGETATION / SOIL CONSERVATION INITIATIVES | 151 |
| FIGURE 63. PERCENTAGE OF RESPONDENTS WHO HAD PREVIOUSLY MADE SWEET POTATO FLOUR AND SUPER-ORALITE | 151 |
| FIGURE 64. PERCENTAGE OF RESPONDENTS WHO HAD PREVIOUSLY MADE PEANUT OIL | 151 |
| FIGURE 65. PERCENTAGE OF RESPONDENTS WHO HAD PREVIOUSLY MADE RED PANDANUS OIL | 152 |
| FIGURE 66. PERCENTAGE OF RESPONDENTS WHO HAD PREVIOUSLY MADE SOYA MILK | 152 |
| FIGURE 67. PERCENTAGE OF RESPONDENTS WHO HAD PREVIOUSLY MADE SWEET POTATO RICE | 152 |
| FIGURE 68. PERCENTAGE OF GROUPS & NON-GROUP RESPONDENTS WHO POSSESSED IMPLEMENTS FOR POST-HARVEST FOOD PROCESSING | 153 |
| FIGURE 69. RESPONDENTS' MAIN SOURCES OF LIVELIHOOD | 154 |
| FIGURE 70. WEALTH DISTRIBUTION DIAGRAM FOR WATCH CD GROUP RESPONDENTS | 154 |
| FIGURE 71. TYPES OF CROPS GROWN BY RESPONDENTS | 155 |
| FIGURE 72. PERCENTAGE OF RESPONDENTS WHO HAD SOLD PRODUCE DURING THE PRECEDING MONTH | 155 |
| FIGURE 73. PERCENTAGE OF RESPONDENTS INVOLVED IN COFFEE PRODUCTION | 156 |
| FIGURE 74. AVERAGE NUMBERS OF LIVESTOCK OWNED BY GROUP MEMBERS AS COMPARED WITH NON-GROUP MEMBER RESPONDENTS | 157 |
| FIGURE 75. PERCENTAGE OF RESPONDENTS WHO HAVE BANK ACCOUNTS | 158 |
| FIGURE 76. | |

| | |
|--|-----|
| COMPARISON OF BUDGETARY PRIORITIES FOR GROUP AND NON-GROUP RESPONDENTS | 158 |
| FIGURE 77. PERCENTAGE OF RESPONDENTS WHO HAVE NUTRITION GARDENS IN THE YARDS OF THEIR HOUSES ... | 159 |
| FIGURE 78. TYPES OF PLANTS GROWN IN NUTRITION GARDENS | 159 |
| FIGURE 79. NUMBER OF CD GROUPS IN KANGGIME & KEMBU-MAMIT SUB-DISTRICTS | 161 |
| FIGURE 80. GROUP STATUS | 161 |
| FIGURE 81. WOMEN'S EDUCATION STATUS IN KANGGIME & KEMBU / MAMIT SUB-DISTRICTS | 163 |
| FIGURE 82. PRINCIPAL SECONDARY CARE GIVERS (WHO LOOKS AFTER THE CHILDREN WHILST THE MOTHER IS WORKING?) | 165 |
| FIGURE 83. RESPONDENTS' PERSISTENCE WITH BREASTFEEDING AND TIME ELAPSED SINCE THEY LAST BREASTFED THEIR CHILDREN | 167 |
| FIGURE 84. RESPONDENTS' AWARENESS AND UNDERSTANDING OF THE IMPORTANCE OF BREAST MILK AND COLOSTRUM FOR CHILD HEALTH AND DEVELOPMENT | 168 |
| FIGURE 85. RESPONDENTS WHO COULD CORRECTLY IDENTIFY SPECIFIC SIGNS OR SYMPTOMS OF DIARRHEA | 170 |
| FIGURE 86. COURSES OF ACTION TAKEN BY MOTHERS WHEN THEIR CHILDREN SHOW SIGNS OR SYMPTOMS OF DIARRHOEAL INFECTION | 171 |
| FIGURE 87. NUMBER AND PERCENTAGE OF RESPONDENTS WHO COULD CORRECTLY IDENTIFY SPECIFIC SIGNS OR SYMPTOMS OF PNEUMONIA / RESPIRATORY INFECTIONS | 172 |
| FIGURE 88. MOTHERS' AWARENESS OF THE THREE MAJOR SIGNS / SYMPTOMS OF PNEUMONIA AND OTHER RESPIRATORY TRACT INFECTIONS | 173 |
| FIGURE 89. COURSES OF ACTION / TREATMENT TAKEN BY MOTHERS WHEN THEIR CHILDREN SHOW SIGNS OF PNEUMONIA OR OTHER RESPIRATORY TRACT INFECTIONS | 174 |
| FIGURE 90. NUMBER AND PERCENTAGE OF RESPONDENTS WHO COULD CORRECTLY IDENTIFY SPECIFIC SIGNS OR SYMPTOMS OF MALARIA | 175 |
| FIGURE 91. RESPONDENTS' AWARENESS OF THE THREE MAJOR SIGNS / SYMPTOMS OF MALARIA | 176 |
| FIGURE 92. WOMEN'S UNDERSTANDING OF MALARIA TRANSMISSION | 176 |
| FIGURE 93. RESPONDENTS' AWARENESS OF THE RISKS RELATED TO MALARIA | 177 |
| FIGURE 94. FORMS OF MALARIA PREVENTION IDENTIFIED BY RESPONDENTS | 178 |
| FIGURE 95. COURSES OF ACTION / TREATMENT TAKEN BY MOTHERS WHEN THEIR CHILDREN SHOW SIGNS OF MALARIA | 179 |
| FIGURE 96. RESPONDENTS' PARTICIPATION IN IMMUNISATION, GROWTH MONITORING AND VITAMIN A SUPPLEMENTATION PROGRAMS | 180 |
| FIGURE 97. RESPONDENTS' RETENTION OF KMS GROWTH MONITORING CARDS | 181 |
| FIGURE 98. REALISATION OF CHILD IMMUNISATION COVERAGE TARGETS AS DETERMINED FROM INFANT GROWTH MONITORING RECORDS (KMS) | 182 |
| FIGURE 99. RESPONDENT'S ABILITY TO IDENTIFY THE DIFFERENT TYPES OF IMMUNISATIONS | 183 |
| FIGURE 100. | |

| | |
|--|-----|
| RESPONDENTS' KNOWLEDGE OF THE TIMING OF THE MEASLES IMMUNISATION | 183 |
| FIGURE 101. | |
| COVERAGE AND FREQUENCY OF ANTE-NATAL VISITS | 184 |

LIST OF TABLES

| | |
|---|-----|
| TABLE 1. WATCH BASELINE SURVEY TARGET AREAS | 6 |
| TABLE 2. POPULATION DATA FOR KANGGIME SUB-DISTRICT | 26 |
| TABLE 3. POPULATION DATA FOR KEMBU / MAMIT SUB-DISTRICT | 27 |
| TABLE 4. GOVERNMENTAL / ADMINISTRATIVE LEVELS IN INDONESIA | 43 |
| TABLE 5 APPROXIMATE WALKING DISTANCES FROM KANGGIME & MAMIT TO OTHER LOCAL POPULATION CENTRES | 46 |
| TABLE 6. DATA ON PRIMARY SCHOOLS AND STUDENTS IN KANGGIME SUB-DISTRICT | 48 |
| TABLE 7. DATA ON PRIMARY SCHOOLS AND STUDENTS IN KEMBU-MAMIT SUB-DISTRICT | 49 |
| TABLE 8. CHEMICAL ANALYSIS OF SMOKED DRY PANDANUS NUTS (INCLUDING MESOCARP) % DRY MATTER | 58 |
| TABLE 9. CHEMICAL COMPOSITION OF PANDANUS JULLIANETHII NUTS EXPRESSED IN G/100G EDIBLE PORTION | 58 |
| TABLE 10. TRADITIONAL PLANT VARIETIES CULTIVATED IN THE KONDA VALLEY AS RECORDED BY O'BRIEN IN 1961-1962 | 62 |
| TABLE 11. PRICES OF THE MOST POPULAR STORE GOODS IN WAMENA & MAMIT | 75 |
| TABLE 12. WEALTH RANKING FOR THE DESA WORAGA, KEMBU-MAMIT SUB-DISTRICT | 78 |
| TABLE 13. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN KANGGIME SUB-DISTRICT & THEIR RATIO AGAINST THE TOTAL POPULATION OF 16,062 INHABITANTS | 88 |
| TABLE 14. HEALTH FACILITIES IN KANGGIME SUB-DISTRICT | 88 |
| TABLE 15. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN MAMIT SUB-DISTRICT & THEIR RATIO AGAINST THE TOTAL POPULATION OF 11,613 INHABITANTS | 90 |
| TABLE 16. HEALTH FACILITIES IN KEMBU / MAMIT SUB-DISTRICT | 90 |
| TABLE 17. RECOMMENDED TIMETABLE FOR CHILD IMMUNISATION IN INDONESIA | 116 |
| TABLE 18. INFANT MORTALITY CASES IN KANGGIME SUB-DISTRICT BETWEEN AUGUST 1997 AUGUST 1998 | 119 |
| TABLE 19. INFANT MORTALITY CASES IN KEMBU-MAMIT SUB-DISTRICT BETWEEN AUGUST 1997 AUGUST 1998 | 120 |
| TABLE 20. MATERNAL MORTALITY CASES IN KANGGIME SUB-DISTRICT OCCURRING BETWEEN AUGUST 1997 AND AUGUST 1998 | 122 |
| TABLE 21. MATERNAL MORTALITY CASES IN KEMBU-MAMIT SUB-DISTRICT OCCURRING BETWEEN AUGUST 1997 AND AUGUST 1998 | 122 |
| TABLE 22 ESTIMATED NUMBERS OF BABIES, INFANTS, PREGNANCIES, DELIVERIES & BREASTFEEDING MOTHERS IN KANGGIME AND KEMBU-MAMIT SUB-DISTRICTS DURING 1998 | 124 |

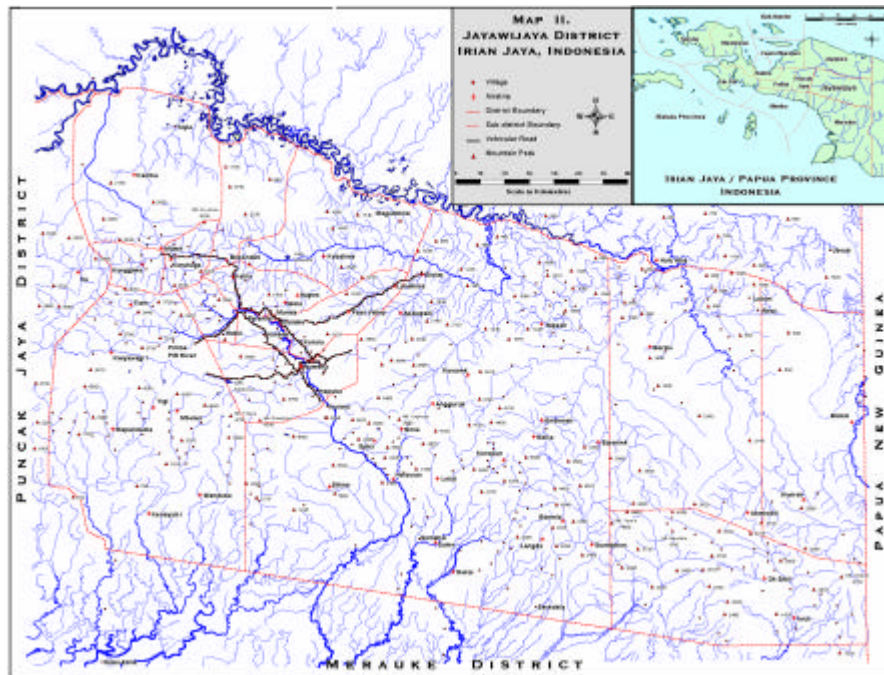
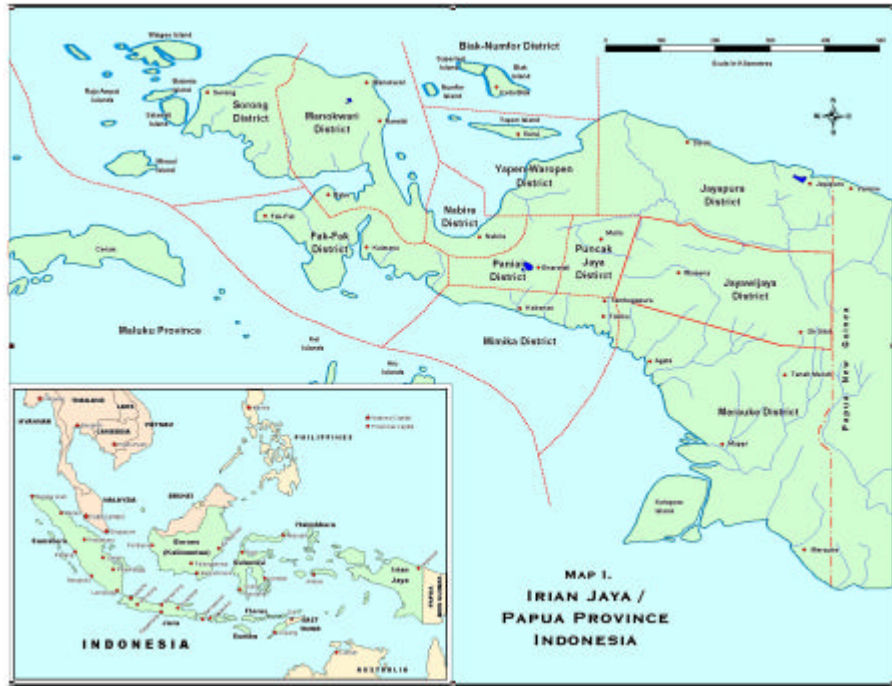
| | |
|---|-----|
| TABLE 23. NUMBER OF CD GROUPS WHO HAVE RECEIVED SELF RELIANCE AND NUTRITIONAL STARTER PACKAGES DURING THE WATCH KANGGIME EXTENSION 1999 – 2000 | 145 |
| TABLE 24. BREAKDOWN OF RESPONDENTS TO THE MID-TERM COMMUNITY DEVELOPMENT COMPARATIVE SURVEY | 149 |
| <hr/> | |
| TABLE 25. DATA ON HEALTH FACILITIES, WORKERS AND CADRES IN KANGGIME SUB-DISTRICT | 188 |
| TABLE 26. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN KANGGIME SUB-DISTRICT & THEIR RATIO AGAINST THE TOTAL POPULATION OF 16,062 INHABITANTS | 198 |
| TABLE 27. HEALTH FACILITIES IN KANGGIME SUB-DISTRICT | 198 |
| TABLE 28. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA KANGGIME & THEIR RATIO AGAINST THE TOTAL POPULATION OF 871 INHABITANTS | 199 |
| TABLE 29. HEALTH FACILITIES IN DESA KANGGIME | 199 |
| TABLE 30. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA NABUNAGE & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,361 INHABITANTS | 200 |
| TABLE 31. HEALTH FACILITIES IN DESA NABUNAGE | 200 |
| TABLE 32. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA KUPARA / PARARI & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,782 INHABITANTS | 201 |
| TABLE 33. HEALTH FACILITIES IN DESA KUPARA / PARARI | 201 |
| TABLE 34. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA KUMBUR & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,405 INHABITANTS | 202 |
| TABLE 35. HEALTH FACILITIES IN DESA KUMBUR | 202 |
| TABLE 36. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA WULUK & THEIR RATIO AGAINST THE TOTAL POPULATION OF 899 INHABITANTS | 203 |
| TABLE 37. HEALTH FACILITIES IN DESA WULUK | 203 |
| TABLE 38. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA NUNGGAWI & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,407 INHABITANTS | 204 |
| TABLE 39. HEALTH FACILITIES IN DESA NUNGGAWI | 204 |
| TABLE 40.. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA YALIWAK & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,212 INHABITANTS | 205 |
| TABLE 41. HEALTH FACILITIES IN DESA YALIWAK | 205 |
| TABLE 42. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA PABA / PABANDO & THEIR RATIO AGAINST THE TOTAL POPULATION OF 834 INHABITANTS | 206 |
| TABLE 43. HEALTH FACILITIES IN DESA PABA / PABANDO | 206 |

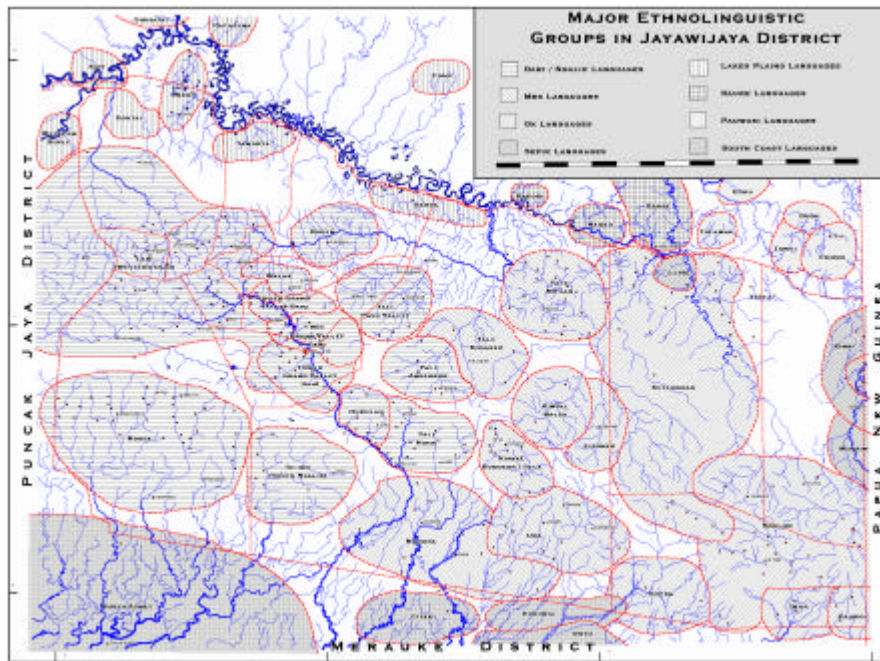
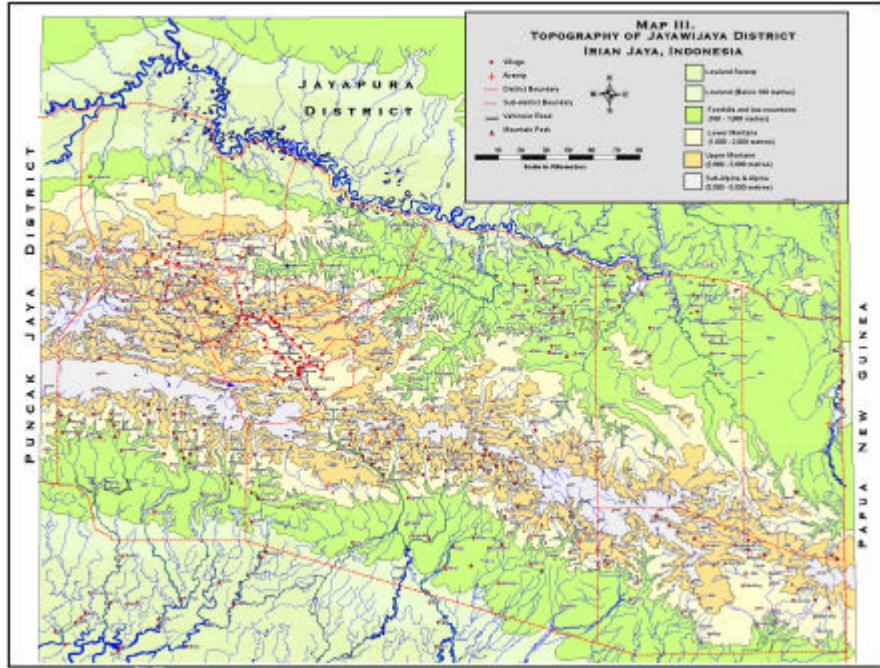
| | | |
|---|--|-----|
| TABLE 44. | | |
| NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA MARTELO / YITELo | | |
| & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,280 INHABITANTS | | 207 |
| TABLE 45. | | |
| HEALTH FACILITIES IN DESA MARTELO / YITELo | | 207 |
| TABLE 46. | | |
| NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA LUGUWI / ABERA | | |
| & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,052 INHABITANTS | | 208 |
| TABLE 47. | | |
| HEALTH FACILITIES IN DESA LUGUWI / ABERA | | 208 |
| TABLE 48. | | |
| NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA BOGONUk | | |
| & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,206 INHABITANTS | | 209 |
| TABLE 49. | | |
| HEALTH FACILITIES IN DESA BOGONUk | | 209 |
| TABLE 50. | | |
| NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA KOKONDAO / YINGGUGA | | |
| & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,121 INHABITANTS | | 210 |
| TABLE 51. | | |
| HEALTH FACILITIES IN DESA KOKONDAO / YINGGUGA | | 210 |
| TABLE 52. | | |
| NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA EGONI | | |
| & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,632 INHABITANTS | | 211 |
| TABLE 53. | | |
| HEALTH FACILITIES IN DESA EGONI | | 211 |
| <hr/> | | |
| TABLE 54. | | |
| DATA ON HEALTH FACILITIES, WORKERS AND CADRES IN KEMBU / MAMIT SUB-DISTRICT | | 213 |
| TABLE 55. | | |
| NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN KEMBU / MAMIT SUB-DISTRICT | | |
| & THEIR RATIO AGAINST THE TOTAL POPULATION OF 11,613 INHABITANTS | | 221 |
| TABLE 56. | | |
| HEALTH FACILITIES IN KEMBU / MAMIT SUB-DISTRICT | | 221 |
| TABLE 57. | | |
| NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA MAMIT | | |
| & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,149 INHABITANTS | | 222 |
| TABLE 58. | | |
| HEALTH FACILITIES IN DESA MAMIT | | 222 |
| TABLE 59. | | |
| NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA KEMBU / NDUNDU | | |
| & THEIR RATIO AGAINST THE TOTAL POPULATION OF 647 INHABITANTS | | 223 |
| TABLE 60. | | |
| HEALTH FACILITIES IN DESA KEMBU / NDUNDU | | 223 |
| TABLE 61. | | |
| NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA KAGE | | |
| & THEIR RATIO AGAINST THE TOTAL POPULATION OF 861 INHABITANTS | | 224 |
| TABLE 62. | | |
| HEALTH FACILITIES IN DESA KAGE | | 224 |
| TABLE 63. | | |
| NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA UIMAGE / GATINI | | |
| & THEIR RATIO AGAINST THE TOTAL POPULATION OF 767 INHABITANTS | | 225 |
| TABLE 64. | | |
| HEALTH FACILITIES IN DESA UIMAGE / GATINI | | 225 |
| TABLE 65. | | |
| NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA YALI | | |
| & THEIR RATIO AGAINST THE TOTAL POPULATION OF 1,076 INHABITANTS | | 226 |

| | |
|--|-----|
| TABLE 66. HEALTH FACILITIES IN DESA YALI | 226 |
| TABLE 67. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA WORAGA & THEIR RATIO AGAINST THE TOTAL POPULATION OF 921 INHABITANTS | 227 |
| TABLE 68. HEALTH FACILITIES IN DESA WORAGA | 227 |
| TABLE 69. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA YOGWEME & THEIR RATIO AGAINST THE TOTAL POPULATION OF 932 INHABITANTS | 228 |
| TABLE 70. HEALTH FACILITIES IN DESA YOGWEME | 228 |
| TABLE 71. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA TELENGGEME & THEIR RATIO AGAINST THE TOTAL POPULATION OF 785 INHABITANTS | 229 |
| TABLE 72. HEALTH FACILITIES IN DESA TELENGGEME | 229 |
| TABLE 73. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA TIRIB & THEIR RATIO AGAINST THE TOTAL POPULATION OF 783 INHABITANTS | 230 |
| TABLE 74. HEALTH FACILITIES IN DESA TIRIB | 230 |
| TABLE 75. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA PANAGA & THEIR RATIO AGAINST THE TOTAL POPULATION OF 720 INHABITANTS | 231 |
| TABLE 76. HEALTH FACILITIES IN DESA PANAGA | 231 |
| TABLE 77. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA KALARIN & THEIR RATIO AGAINST THE TOTAL POPULATION OF 758 INHABITANTS | 232 |
| TABLE 78. HEALTH FACILITIES IN DESA KALARIN | 232 |
| TABLE 79. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA NOLOGPUR & THEIR RATIO AGAINST THE TOTAL POPULATION OF 594 INHABITANTS | 233 |
| TABLE 80. HEALTH FACILITIES IN DESA NOLOGPUR | 233 |
| TABLE 81. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA NAMBU & THEIR RATIO AGAINST THE TOTAL POPULATION OF 936 INHABITANTS | 234 |
| TABLE 82. HEALTH FACILITIES IN DESA NAMBU | 234 |
| TABLE 83. NUMBER OF FORMAL AND NON-FORMAL HEALTH WORKERS IN DESA GELOK & THEIR RATIO AGAINST THE TOTAL POPULATION OF 684 INHABITANTS | 235 |
| TABLE 84. HEALTH FACILITIES IN DESA GELOK | 235 |
| TABLE 85. PRINCIPAL ELEMENTS OF THE LANI SPIRIT WORLD ACCORDING TO LARSON, HAYWARD, O'BRIEN AND PLOEG | 252 |

LIST OF MAPS

| | |
|---|-------|
| MAP I. IRIAN JAYA / PAPUA PROVINCE, INDONESIA | XIII. |
| MAP II. JAYAWIJAYA DISTRICT, IRIAN JAYA, INDONESIA | XIV. |
| MAP III. TOPOGRAPHY OF JAYAWIJAYA DISTRICT, IRIAN JAYA, INDONESIA | XV. |
| MAP IV. MAJOR ETHNOLINGUISTIC GROUPS IN JAYAWIJAYA | XVI. |
| MAP V. THE TOLI VALLEY WATERSHED: KANGGIME, KEMBU-MAMIT AND KARUBAGA SUB-DISTRICTS | 11. |
| MAP VI. GEOLOGY OF THE TOLI VALLEY WATERSHED: KANGGIME, KEMBU-MAMIT AND KARUBAGA SUB-DISTRICTS | 12. |
| MAP VII. LANI MIGRATION PATTERNS | 19. |
| MAP VIII. RECOGNISED ETHNOLINGUISTIC SUB-GROUPS OF THE LANI | 31. |





EXECUTIVE SUMMARY

This document contains a description and analysis of the results in the baseline and mid-term project monitoring surveys. Data was collected in the Kanggime and Kembu Sub-Districts by a survey team made up of project staff and nursing school students and primarily for the purpose of evaluating the effectiveness of project interventions in the WATCH Kanggime Extension Phase 1998 – 2000. While evaluating whether the project influenced the behavior and thinking of the Lani / Western Dani target communities was the main purpose of the study, the surveys also served a number of secondary functions. They aided in the design of effective development project monitoring and evaluation approaches for Jayawijaya, in the transfer of data gathering and reporting skills to future health workers, they facilitated a better understanding of health, community development and gender issues in Jayawijaya, and they were a means to investigate the validity of the assumptions guiding the project.

The Jayawijaya WATCH Project was a women and children's primary health care project that began in 1991. Funded by AusAID, the project was managed by World Vision Australia and jointly implemented by World Vision International Indonesia and the Jayawijaya Department of Health. Because of favourable reviews and requests from local government, in 1994 when the project had planned to conclude, AusAID granted a three-year project extension. In 1997 AusAID approved a further extension known as the Kanggime Extension that ran from 1998 through until October 2000. This second extension focused on improving the health and well being of women, children and the broader community in Kanggime and Kembu-Mamit Sub-Districts, as opposed to all of Jayawijaya, which had been the scope of project interventions between 1991 and 1997. As the history, approaches and interventions of the Jayawijaya WATCH Project have been thoroughly described in a number of other documents¹ background information on the WATCH Project and general information about Irian Jaya and Jayawijaya have been omitted from this report.

It was originally intended that this report should include the results of an End-of-Project survey. A rapidly deteriorating security situation in the last few months of the project however, led to the evacuation of project staff from Jayawijaya. Even before the evacuation, field data collection activities had come to be considered inappropriate given the situation.

This report has five sections as well as a series of annexes. The first section contains information on the purpose and functions of the surveys, the methods used, the fieldwork experience, as well as the lessons learned in the course of conducting the surveys. The second section is the largest section and contains the results of the baseline survey as well as a considerable amount of ecological, demographic, social and economic information to help conceptualize the survey findings. The third section of the report presents the results of the baseline survey's health section as well as information about the Indonesian Health system. The fourth and fifth sections are almost entirely survey results and analysis. They are, respectively, the GAD and the Health sections of the

1 Reviews of different aspects of the Jayawijaya WATCH Project can be found in Dibley (1994), Cowled (1996), Dawson (1997), Grimes (1999), Gunawan (1999), Hewat & Hewat (2000). Other documents produced by the Jayawijaya WATCH Project, including planning documents, regular and special reports, etc., are also useful and the most significant of these are listed in the bibliography.

mid-term survey.

SECTION I

METHODS AND METHODOLOGY

1 SURVEY METHODOLOGY AND RATIONALE

1.1 PRIMARY PURPOSE

The primary purpose of the survey is to establish sufficient baseline data against which to monitor the progress of WATCH interventions. It is therefore primarily a management and monitoring tool designed to measure the projects progress in helping communities to move away from conditions of poor community health and welfare.

1.2 SECONDARY FUNCTIONS

Besides this primary purpose, the annual surveys fulfilled a number of secondary functions that were of considerable importance in the project=s overall strategy of establishing an effective and sustainable model for PHC in Jayawijaya. These secondary functions include:

1. To experiment and practically test a variety of methods and strategies for field data gathering and project monitoring as part of the attempt to design an effective and sustainable PHC model;
2. To help develop the capacity of the Jayawijaya health service and Health Information System by transferring skills in data collection and basic research methods to SPK graduates who are the health workers of the future;
3. To facilitate greater understanding amongst project staff, managers and donors, of actual problems being faced by the members of the target communities and to assist with the planning of future interventions;
4. To investigate the validity of the assumptions underlying the WATCH project as well as the assumptions underlying health care and development activities in Jayawijaya.

As such the practice of conducting annual surveys has become an integral part of the central project strategy and not just as a peripheral monitoring system.

2. SURVEY METHODS

2.1 THE SURVEY TEAM

The field data collection for both the mid-term and baseline surveys was done by a survey team consisting of 15 final year students of the Wamena Nursing School (*Sekolah Perawatan Kesehatan – SPK*) and headed by the Health Coordinator, nutritionist, midwife and health assistant. The GAD/CD personnel also assisted the survey team, particularly with the PLA, market surveys and CD questionnaires. Since the position of WATCH Monitoring and Evaluation Officer was vacant throughout the period of the Kanggime Extension, the monitoring and evaluation officer from WATCH's sister project, the Alor Community Based Health Project (ACBHP) came to Wamena for approximately one month early in 2000. He assisted the project staff with formulating better approaches to the gender and development survey and helped to improve the questionnaires and sampling methods. He also helped staff conduct a refresher-training course for the SPK students involved in the survey team and he accompanied the team into the field.

2.1.1 TRAINING

Prior to the baseline survey a three-day training course was held to teach the members of the survey team various aspects about conducting a survey. As well as information specifically relating to conducting surveys, communication skills were covered in this pre-survey training. The main reference used here was the *Survey Trainers Guide for PVO CS Project Rapid KPC Survey 1994*. With the assistance of the monitoring and evaluation officer from the ACBHP, refresher training was also conducted prior to the midterm survey.

2.2 FIELD DATA COLLECTION

Most field data for the baseline survey was collected over the course of four separate visits to the target area. The first survey visit was in October 1998 and lasted for a total of two weeks. The next visit was in November 1998. The third visit, which only involved the health section of the survey team, was conducted in December. The final survey visit was held at the end of January 1999. Field data collection for the mid-term survey was conducted over two weeks in late February 2000.

2.3 PRIMARY DATA COLLECTION

2.3.1 QUESTIONNAIRES

There were two main questionnaires used for the baseline survey. The first, a health questionnaire, was borrowed from the Child Survival Support Program at John Hopkins University. It aimed to capture the incidence and attitudes of such things as breastfeeding practices and child nutrition and health, maternal health and nutrition, diarrhea, malaria and pneumonia, payment for health services and medicines, and environmental

health including clean water and latrine usage. The second questionnaire was designed to capture information about socioeconomic factors and changes in the target communities. This information was principally for monitoring the Gender & Development (GAD) and Community Development (CD) programs.

For the mid-term survey, the health questionnaire was modified slightly whereas the questionnaire for the Gender and Development section was completely overhauled. Two questionnaires were drawn up, the first targeted members of WATCH groups only whilst the second targeted both group members and non-group members (the control group). The purpose of this questionnaire was to measure the impact of participation in WATCH activities on the attitudes and behavior of group members (as opposed to non-group members). It focused on the dimensions of skill transfer, community financing and community health. This design intended to alleviate the problems with monitoring and evaluation that have existed due to the project's lack of adequate baseline data on the socio-economic status of the members of CD groups.

2.3.2 NUTRITIONAL & ANTHROPOMETRIC SURVEYS

In addition to the health and social-economy surveys, nutrition surveys were conducted using two popular methods: the twenty-four hour recall method (getting respondents to describe what they remember eating during the last 24-hours) and anthropometric surveys (i.e. height, weight and middle upper arm circumference measurements).

2.3.3 PARTICIPATORY LEARNING AND ACTION

While WATCH had been using Participatory Learning and Action (PLA) techniques with community development groups since the first phase of the project, it was not until the end of the second phase of the project that WATCH began using PLA in their annual surveys. As part of the Kanggime Extension Baseline Surveys, 204 cadres were trained in PLA techniques including the ten seed method for determining family budgetary priorities and the wealth ranking technique for determining the approximate wealth distribution within the community. After this training the cadres were required to return to their respective groups and carry out a group mapping assignment including an activity plan and group expectations over the next two years.

Unfortunately, the initial group mapping exercises were not entirely successful. There were problems with cadres not understanding the point of the exercise and with difficulties in them expressing their ideas in Indonesian (all but one of project staff couldn't understand Lani). Moreover, as almost a month passed between the PLA activities and the collection of the data, many cadres seem to have become distracted from completing their task. Also, there were still many unresolved problems with the registration and membership of CD groups. The groups that formed in WATCH I were not operating effectively. It was found that different people from the one family would be registered in different groups or that groups might be registered both with WATCH and with the WVII Area Development Program (that covered Karubaga, Kanggime and Kembu-Mamit). This proved problematic both for conducting PLA surveys and also for interviewing group members. After these

issues had been resolved and when project field staff had more time to provide further supervision and support, group mapping and planning exercises were more successful. However, these results did not manifest until after the baseline survey and so had to be shifted into the mid-term survey. The data generated from other PLA activities, such as wealth ranking exercises and group discussions, were included in the baseline survey results.

2.3.4 FIELD OBSERVATION

Field observation was an extremely important method both for generating data and also for increasing the reliability of data gathered by other means. To collect a wide variety of information on social conditions, agriculture and animal husbandry, and gender relations, the gender and development staff used field observation extensively. The Gender and Development Assistant also conducted market research by attending both the Kanggime and Mamit markets on four separate occasions each. The health section used field observation principally for evaluating the performance of health workers, cadres and traditional birth attendants but also used it to cross-examine many other findings.

2.4 SECONDARY DATA SOURCES

The baseline survey also drew from a range of secondary sources. The most important of these was the data generated through the Jayawijaya Health Information System (HIS). Any reports of maternal or infant mortality from HIS records were cross checked by project staff, either with the mothers whose babies who were reported to have died or the sisters of women who were reported to have died. Other sources included: records from the Bureau of Statistics, and data from the Puskesmas, subdistrict Administration offices and village level health posts in across Kanggime and Kembu-Mamit sub-districts. Literature about the Lani and other neighboring groups and about certain aspects of development theory was also used both for historically contextualising and for theoretically situating the surveys findings.

2.5 SAMPLING METHODS

2.5.1 CLUSTERING AND RESPONDENT SAMPLING

The sampling method to be used in the baseline survey had to be chosen carefully. Whilst the size of the new target area had been reduced considerably from the first two phases of the WATCH Project, it was still a very large area (around 4,000 km²) and most villages were only accessible by foot. Therefore it was considered unfeasible to collect data by visiting each small community, or even each administrative village (*Desa*) centre. Instead the survey team used a mixture of selective and random sampling to select a total of 10 villages in the two sub-districts. The criteria for selecting survey locations was that sample villages should be grouped according to their proximity to transport and health services so that a range of geographical conditions and locations could be represented. 50% of the locations were to be located within an hours walk of the airstrip and puskesmas, 30% should be located within half a days walk of the airstrip and puskesmas whilst the remaining 20% should be located over half a days walk from the airstrip and puskesmas. The locations that were ultimately selected and surveyed can be seen in table 1.

However, the sampling methods used in the baseline survey were still considered inadequate because they omitted a great deal of the target area. It was a major oversight to not represent the most remote and disadvantaged communities (those lying in the lower reaches of the Toli river and on the northern slopes of the Kembu Range). The technique of randomly selecting subjects by interviewing whoever was met whilst walking

around each center would have also introduced bias in the sample. As the monitoring and evaluation team looked conspicuous, it is doubtful that selection was all that random. Only people motivated and able to meet with the visiting survey team would have been interviewed. In selecting respondents to the health questionnaire, only women with babies under two years old were chosen as many of the questions related only to infant and maternal health. With regards to the socioeconomic questionnaire, thirty out of the 96 CD groups were questioned about the status of their group and their perceptions of health, gender, social and economic issues. For the sake of efficiency most of the respondents to this questionnaire were the same respondents for the health questionnaire. Whilst this ‘doubling up’ of questionnaires considerably reduced the workload for data collectors, it increased the time and patience required by each respondent. Furthermore, the target of 30 respondents at each of the ten surveyed villages proved to be too high.

TABLE 1. WATCHBASELINE SURVEY TARGET AREAS

| CRITERIA | SURVEY TARGET DESA | SUB-DISTRICT |
|---|---------------------------|---------------------|
| Groups living in areas around the airstrips. | Wama | Kanggime |
| | Kumbur | Kanggime |
| | Kuttime | Kanggime |
| | Woraga | Mamit |
| | Latian | Mamit |
| Groups living in areas several hours (2 – 6) walk from the airstrips. | Tingkom | Kanggime |
| | Nelewere | Kanggime |
| | Gatini | Mamit |
| Groups living in areas over a days walk from the airstrips. | Paba | Kanggime |
| | Yali | Mamit |

In order to improve the quality of sampling methods in the mid-term survey, the monitoring and evaluation coordinator from ACBHP recommended the use of a rapid sampling technique that was originally designed and developed for the WHO’s Expanded Program on Immunisation. This technique employs a two-stage process for respondent sampling. Firstly, 30 clusters are defined and selected. These clusters should have the same number of subjects in them regardless of the size of the area. As there was no reliable population data and as the government administrative boundaries in the target area were unclear, churches were chosen as the most appropriate boundaries to draw clusters from and 17 clusters were drawn in Kanggime and 13 were drawn in Kembu-Mamit. Secondly, simple random sampling was done during visits to the field. They selected 10 people to make up a cluster by simply sending out word that the survey team had arrived to select women with children between 0 and 23 months old to interview. This was logical in light of the fact that settlements in the project area were spread over large and extremely rugged areas and so it was considered unfeasible for the survey team

to reach these remote settlements and collect a proportionally representative sample. In most cases more potential respondents turned up than was required and so the survey team simply selected respondents via lottery. The project fell 30 short of the ideal number of 300 respondents. Once in the field the monitoring and evaluation team was broken down into 3 groups with each group surveying between 8 and 11 clusters.

2.5.2 DETERMINATION OF SAMPLE SIZE

The number of respondents targeted by the survey questionnaires can be determined using the formula:

$$N = z^2 (pq) / d^2$$

Where n = sample size

z = degree of statistical reliability

p = estimated prevalence

q = p-1, and

d = degree of accuracy / margin of error

In order to establish the maximum sample size using the above formula we use the value p = 0.5. The value of d depends upon the required degree of accuracy, which in turn depends upon the type of research being undertaken. In the case of the WATCH annual surveys, which are primarily conducted for monitoring and evaluation purposes, we can accept a higher margin of error than would be required in more scientifically oriented research. The lower the value of d the higher the degree of accuracy. For the WATCH surveys a value of d = 0.1 was applied. The degree of statistical reliability was set at 95% or z = 1.96. Based upon these values we were able to calculate the required sample size as follows:

$$n = [(1.96 \times 1.96) \times 0.5 (1 - 0.5)] / 0.1 \times 0.1$$

$$n = 96$$

To reduce the margin of error we chose to increase the sample size well beyond that which was calculated. Based upon past experience using sample sizes of around 210 respondents (7 respondents per cluster) have proved to be adequate for monitoring and evaluation surveys, but for these surveys we aimed for a target sample size of 300 respondents and ultimately managed to cover a total of 270 respondents.

2.6 DATA ANALYSIS & RESULT WRITING

The survey team supervisor checked the accuracy of the field data before being classified according to a cluster. Quantitative data was sorted using EPI Info 6.01, (a computer program developed by *The Division of Surveillance and Epidemiology, Centre for Disease Control and Prevention, CDC, 1994*). Survey results were then analysed and written up in Indonesian by WATCH personnel. In the process of translating the report into English, the results were again revised, statistically cross-checked and reanalyzed, statistical data was graphed and some additional graphic materials, including maps and pictorial diagrams, were added. Whilst on the one hand the involvement of numerous people in the processes of data collection, analysis and result writing may

have introduced more room for statistical error, such errors would be minimized by the rigorous cross checking and the contributions of involved allowed the staff to produce a comprehensive and insightful report.

3. LESSONS LEARNED FROM CONDUCTING THE SURVEYS

3.1 PREPARATION AND FIELD TESTING OF SURVEY QUESTIONNAIRES

Not enough time was allowed for the preparation and field-testing of survey questionnaires. Indeed the final questionnaire for the mid-term survey was not completed until the survey team was ready to depart for the field. This resulted in the team only being training and informed regarding the final questionnaire when they were about to use it. The lack of field tests prior to the collection of field data meant that revision of this tool took place whilst it was being used in the field. This was less than ideal because it distracted the team from their main task of doing the survey.

3.2 THE SURVEY TEAM

The decision to use SPK students as data collectors was an excellent one. It facilitated the transfer of skills between project staff and SPK students through allowing the latter to be involved in a practical research exercise. As many of these students have already or will shortly become the next generation of health workers in Jayawijaya, they will be more aware of the importance and methods required for on-going HIS data collection.

3.3 RELIANCE ON AIR TRANSPORT

The survey team was highly reliant on the light aircraft owned by the Mission Aviation Fellowship (MAF). As MAF flight schedules are extremely full and as there is always an extremely high demand for additional charter flights, the transportation of WATCH's entire survey team to and from the target areas required multiple flights that had to be spread over a series of days. This caused considerable delays in field data collection. Based on this experience project staff advises that in future, large teams of data collectors should use land vehicles, if land transportation is an option. Even though it will take longer to reach the target area, several vehicles can be chartered and thus the entire team could be assembled in the target area at roughly the same time.

3.4 TOO MANY INDICATORS AND QUESTIONS

Due to the wide range of project interventions, the surveys attempted to examine too many indicators. As a result the survey questionnaires were very long and many respondents found it quite onerous to answer all the questions. Furthermore, the sheer number of variables being considered made analysis of the data very complex and a lot of the data could not be processed directly through the EPI Info computer program as had been originally hoped.

3.5 DOUBLING UP OF QUESTIONNAIRES

For the sake of efficiency, respondents to the health questionnaire were also asked to respond to the

community development questionnaire. Whilst this made the work of the data collectors much easier it was less advantageous to the respondents themselves. Being asked so many questions led many to become bored or disinterested part way through the second questionnaire.

3.6 POOR DEMOGRAPHIC DATA

The lack of accurate population data for the target areas made it extremely difficult to properly sample the target areas and also to accurately analyse results. This point is discussed in detail in section II / 3.1.1.

3.7 KMS CARDS BASED EVALUATIONS

The survey team intended to cross check many of their results for various infant and maternal health activities using the health record cards (*KMS*) issued through the *posyandu* clinics. Unfortunately, many children had not been issued with *KMS* cards and many mothers who claimed that they did have *KMS* cards for their children did not bring them to the survey points. Even in cases where the cards could be examined by the survey team, *posyandu* workers had not always completed the cards properly. This meant that for certain variables such as child immunisation and growth monitoring practices, WATCH staff had to rely solely on the information provided by respondents.

3.8 COMBINING SURVEY TRIPS WITH OTHER INTERVENTIONS

WATCH believes that the data collection visits should also have been used as an opportunity to distribute Vitamin A and Iron Tablets to the local midwives, train community development volunteers and to conduct other health consultations and provide curative assistance. Because the terrain in Jayawijaya is too rugged and the costs of transportation to the target areas too high, it is economically and logistically easier to combine the purposes of what would otherwise be separate journeys.

3.9 PROBLEMS WITH GENDER SURVEY METHODS

The methods used to survey gender issues remained poor. It is extremely difficult to quantitatively measure gender problems because there is such a large cultural gap between the target communities and the survey team. In future, focus group discussions, in-depth interviews and other approaches need to be included in the overall surveying approach if gender issues are to be monitored and adequately evaluated in the annual surveys.

3.10 PARTICIPATORY LEARNING AND ACTION (PLA) AS A SURVEY TOOL

PLA is an appropriate method for working in the New Guinea Highlands. The two way flow of ideas is important for gathering qualitative data for monitoring and evaluation purposes and also to allow villagers to talk about their hopes and needs. It is culturally sensitive to allow Jayawijayans the opportunity to speak and for others to listen. As we have noted, although PLA is designed for community capacity building, it can also be used for monitoring and evaluation purposes. However because PLA is an activity that needs to operate at the community's pace, project staff experienced some difficulties in using PLA as a part of the annual surveys, because time constraints meant that PLA activities either had to be rushed to fit them into the survey timeframe

or allowed to run at their own momentum, which meant that results might not be available for inclusion in the survey results. We therefore recommend that PLA should be used as an essential part of the project monitoring and evaluation system but timeframes must be kept as flexible as possible.