**Baseline in a Quasi-experiment based on a Socioecological Model: Rufunsa District, Lusaka Province Zambia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | | Total  N(%) | Nyangwena  n(%) | Bundabunda  n(%) | Rufunsa  n(%) | p-Value |
| **Households** | | **89(100.00)** | **27(100.00)** | **16(100.00)** | **46(100.00)** |  |
| Children’s age in months | 6-8 | 17(19.10) | 3(11.11) | 4(25.00) | 10(21.74) | 0.1021 |
| 9-11 | 21(23.60) | 4(14.81) | 3(18.75) | 14(30.43) |
| 12-23 | 51(57.30) | 20(74.07) | 9(56.25) | 22(47.83) |
| Children’s gender | Male | 49(55.06) | 15(55.56) | 11(68.75) | 23(50.00) | 0.4335 |
| Female | 40(44.94) | 12((44.44) | 5(31.25) | 23((50.00) |
| Care givers’ age | 18-19 | 9(10.11) | 2(7.41) | 1(6.25) | 6(13.04) | 0.0090 |
| 20-24 | 27(30.34) | 14(51.85) | 0(0.00) | 13(28.26) |
| 25-29 | 27(30.34) | 6(22.22) | 5(31.25) | 16(34.78) |
| 30-34 | 16(17.98) | 3(11.11) | 8(50.00) | 5(10.87) |
| >35 | 10(11.24) | 2(7.41) | 2(12.50) | 6(13.04) |
| HH head age | 15-19 |  |  |  |  |  |
| 20-24 |  |  |  |  |  |
| 25-29 |  |  |  |  |  |
| 30-34 |  |  |  |  |  |
| 35-39 |  |  |  |  |  |
| 40-44 |  |  |  |  |  |
| 45-49 |  |  |  |  |  |
| 50-54 |  |  |  |  |  |
| 55-60 |  |  |  |  |  |
| 60+ |  |  |  |  |  |
| Respondent age | 20-24 |  |  |  |  |  |
| 25-29 |  |  |  |  |  |
| 30-34 |  |  |  |  |  |
| 35-39 |  |  |  |  |  |
| 40-44 |  |  |  |  |  |
| 45-49 |  |  |  |  |  |
| 50-54 |  |  |  |  |  |
| 55-60 |  |  |  |  |  |
| 60+ |  |  |  |  |  |
| HH head gender | Male | 68(76.40) | 23(85.19) | 14(87.50) | 31(67.39) | 0.1181 |
| Female | 21(23.60) | 4(14.81) | 2(12.50) | 15(32.61) |
| HH with regular income | Yes | 39(43.82) | 19(70.37) | 7(43.75) | 13(28.26) | 0.0023 |
| No | 50(50.18) | 8(29.63) | 9(56.25) | 33(71.74) |
| Household head level of education |  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| HH toilet type | Flushing | 4(4.49) | 2(7.41) | 1(6.25) | 1(2.17) | 0.5455 |
| Pit | 85(95.51) | 25(92.59) | 15(93.75) | 45(97.83) |

HH: Household

The overall median age of the children was 12 years with interquartile rage of 4 years. The median age with interquartile rage in Nyangwena, Bundabunda and Rufunsa wards were 12(7), 12(3) and 11(3) respectively.

Dietary diversity and other Feeding indicators among children aged 6-23 months

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable |  | Total  N(%) | Nyangwena  n(%) | Bundabunda  n(%) | Rufunsa  n(%) | P-Value\* |
| **Children aged 6-23 months** | | **89(100.00)** | **27(100.00)** | **16(100.00)** | **46(100.00)** |  |
| Met Minimum Dietary Diversity | Yes | 8(8.99) | 2(7.41) | 2(12.50) | 4(8.70) | 0.8501 |
| No | 81(91.01) | 25(92.59) | 14(87.50) | 42(91.30) |
| Met Age Appropriate Minimum Meal Frequency | Yes | 28(31.46) | 9(33.33) | 3(18.75) | 16(34.78) | 0.4815 |
| No | 61(60.54) | 18(66.67) | 13(81.25) | 30(65.22) |
| Met Minimum Acceptable Diet | Yes | 8(8.99) | 1(3.70) | 3(18.75) | 4(8.70) | 0.2517 |
| No | 81(91.01) | 26(96.30) | 13(81.25) | 42(91.30) |
| Consumed micronutrients (iron) | Yes | 9(10.11) | 5(18.52) | 0(0.00) | 4(8.70) | 0.1384 |
| No | 80(89.89) | 22(81.48) | 16(100.00) | 42(91.30) |
| Consumed cowpea meal | Yes | 1(1.12) | 1(3.70) | 0(0.00) | 0(0.00) | 0.3172 |
| No | 88(98.88) | 26(96.30) | 16(100.00) | 46(100.00) |
| No | 58(65.17) | 24(88.87) | 8(50.00) | 26(56.52) |
| Consumed Soybean meal | Yes | 1(1.12) | 0(0.00) | 0(0.00) | 1(2.17) | 0.6267 |
| No | 88(98.89) | 27(100.00) | 16(100.00) | 45(97.83) |
| No | 58(65.17) | 19(70.37) | 4(25.00) | 35(76.09) |
| Infants aged 6-8 years who received complementary foods | **Total** | **18(100.00)** | **3(100.00)** | **4(100.00)** | **11(100.00)** | 0.4880 |
| Yes | 14(77.78) | 2(66.67) | 4(100.00) | 8(72.73) |
| No | 4(22.22) | 1(33.33) | 0(0.00) | 3(27.27) |

\*Kruskal-Wallis equality-of-populations rank test

Cowpea and Soybean in Households with Children aged 6-23 months

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | | | | Total | | Nyangwena | Bundabunda | Rufunsa | p-Value |
| **HHs n(%)** | | | | **89(100.00)** | | **27(100.00)** | **16(100.00)** | **46(100.00)** |  |
| Grow cowpea n(%) | | | Yes | 15(16.85) | | 2(7.41) | 5(31.25) | 8(17.39) | 0.1321 |
| No | 74(83.15) | | 25(92.59) | 11(68.75) | 38(82.61) |
| Prepare Cowpea in HH meals n(%) | | | yes | 46(51.69) | | 7(25.93) | 10(62.50) | 29(63.04) | 0.0061 |
| no | 43(48.31) | | 20(74.07) | 6(37.50) | 17(36.96) |
|  | | Whole, boiled with maize gritsa | | 18(20.22) | | 5(71.43) | 6(60.00) | 7(24.14) |
|  | | Mashed & prepared as soup | | 15(16.85) | | 1(3.70) | 1(10.00) | 13(44.83) |
|  | | Whole, boiled as relish | | 7(7.87) | | 0(0.00) | 1(10.00) | 6(20.69) |
|  | | Otherb | | 6(6.74) | | 1(3.70) | 2(20.00) | 3(10.34) |
| Prepare Cowpea for children n(%) | | | yes |  | |  |  |  |  |
| no |  | |  |  |  |  |
|  | |  | |  | |  |  |  |  |
|  | |  | |  | |  |  |  |  |
|  | |  | |  | |  |  |  |  |
|  | |  | |  | |  |  |  |  |
|  | |  | |  | |  |  |  |  |
| Grow soybean n(%) | | | Yes | 8(8.99) | 2(7.41) | | 2(12.50) | 4(8.70) | 0.8501 |
| No | 81(91.01) | 25(92.59) | | 14(87.50) | 42(91.30) |
| Prepare Soybean in HH meals n(%) | | | yes | 23() | 4() | | 10() | 9() | 0.001 |
| no | 66() | 23() | | 6() | 37() |
|  | Flour | | | 8(34.78) | 2(50.00) | | 4(40.00) | 2(22.22) | 0.5186 |
|  | Soup | | | 7(30.43) | 1(25.00) | | 2(20.00) | 4(44.44) |
|  | Porridge | | | 5(21.74) | 1(25.00) | | 2(20.00) | 2(22.22) |
|  | otherc | | | 3(13.05) | 0(0.00) | | 2(20.00) | 1(11.11) |
|  |  | | |  |  | |  |  |  |
|  |  | | |  |  | |  |  |  |
|  |  | | |  |  | |  |  |  |
|  |  | | |  |  | |  |  |  |
|  |  | | |  |  | |  |  |  |

HH: Household; aLarge milled maize grits also known samp in Zambia; bUsed for flavor and sold for income; cCooking oil, flavor, source of income

Post COVID 19 lock down effect on households with children aged 6-23 months

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | | Total  N=89 | Nyangwena  n=27 | Bundabunda  n=16 | Rufunsa  n=46 | p-value |
| Production increased | Yes | 20(22.47) | 9(33.33) | 1(6.25) | 10(21.74) | 0.1218 |
| No | 69(77.53) | 18(66.67) | 15(93.75) | 36(78.26) |
| Extension services accessed | Yes | 9(10.11) | 3(11.11) | 1(6.25) | 5(10.87) | 0.8531 |
| No | 80(89.89) | 24(88.89) | 15(93.75) | 41(89.13) |
| Income increased | Yes | 13(14.61) | 8(29.63) | 0(0.00) | 5(10.87) | 0.0179 |
| No | 76(85.39) | 19(70.37) | 16(100.00) | 41(89.13) |
| Hired labor | Yes | 11(12.36) | 5(18.52) | 1(6.25) | 5(10.87) | 0.4554 |
| No | 78(87.64) | 22(81.48) | 15(93.75) | 41(89.13) |
| Food price increase experience | Yes | 72(80.90) | 22(81.48) | 12(75.00) | 38(82.61) | 0.7993 |
| No | 17(19.10) | 5(18.52) | 4(25.00) | 8(17.39) |
| Cash for inputs availability | Yes | 25(28.09) | 9(33.33) | 2(12.50) | 14(30.43) | 0.3026 |
| No | 64(71.91) | 18(66.67) | 14(87.50) | 32(69.57) |
| Imported Food  Substitution | Yes | 12(13.48) | 3(11.11) | 2(12.50) | 7(15.22) | 0.8785 |
| No | 77(86.52) | 24(88.89) | 14(87.50) | 39(84.78) |
| Alternative food option | Yes | 17(19.10) | 7(25.93) | 3(18.75) | 7(15.22) | 0.5353 |
| No | 72(80.90) | 20(74.07) | 13(81.25) | 39(84.78) |
| Low input agriculture option | Yes | 48(53.93) | 13(48.15) | 12(75.00) | 23(50.00) | 0.1765 |
| No | 41(46.07) | 14(51.85) | 4(25.00) | 23(50.00) |
| Irrigation water access | Yes | 55(61.80) | 22(81.48) | 10(62.50) | 23(50.00) | 0.0292 |
| No | 34(38.20) | 5(18.52) | 6(37.50) | 23(50.00) |
| Social Protection | FISP | 11(12.36) | 5(18.52) | 2(12.50) | 4(8.70) | 0.218 |
| CST | 5(5.62) | 0(0.00) | 1(6.25) | 4(8.70) |
| None | 72(80.90) | 22(81.48) | 12(75.00) | 38(82.61) |
| SFP | 1(1.12) | 0(0.00) | 1(6.25) | 0(0.00) |
| Social Protection was for COVID 19 | Yes | 8(8.99) | 0(0.00) | 2(12.50) | 6(13.04) | 0.1504 |
| No | 81(91.01) | 27(100.00) | 14(87.50) | 40(86.96) |

Association between meeting MDD and background characteristics

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | | Nyangwena | | | Rufunsa | | | Bundabunda | | | Total | | |
|  | | **Yes n(%)** | **No n(%)** | **p-value** | **Yes n(%)** | **No n(%)** | **p-value** | **Yes n(%)** | **No n(%)** | **p-value** | **Yes n(%)** | **No n(%)** | **p-value** |
| Total Children aged 6-23 months | |  |  |  |  |  |  |  |  |  |  |  |  |
| Met MMF | |  |  |  |  |  |  |  |  |  |  |  |  |
| Met MAD | |  |  |  |  |  |  |  |  |  |  |  |  |
| Consumed Micronutrients | |  |  |  |  |  |  |  |  |  |  |  |  |
| Consumed Cowpea | |  |  |  |  |  |  |  |  |  |  |  |  |
| Consumed Soybean | |  |  |  |  |  |  |  |  |  |  |  |  |
| Aged 6-8 months received complementary foods | |  |  |  |  |  |  |  |  |  |  |  |  |
| Age of children in months | 6-8 |  |  |  |  |  |  |  |  |  |  |  |  |
| 9-11 |  |  |  |  |  |  |  |  |  |  |  |  |
| 12-23 |  |  |  |  |  |  |  |  |  |  |  |  |
| Gender of children | Male |  |  |  |  |  |  |  |  |  |  |  |  |
| Female |  |  |  |  |  |  |  |  |  |  |  |  |
| Age of caregiver | 18-19 |  |  |  |  |  |  |  |  |  |  |  |  |
| 20-24 |  |  |  |  |  |  |  |  |  |  |  |  |
| 25-29 |  |  |  |  |  |  |  |  |  |  |  |  |
| 30-34 |  |  |  |  |  |  |  |  |  |  |  |  |
| >35 |  |  |  |  |  |  |  |  |  |  |  |  |
| Household factors | |  |  |  |  |  |  |  |  |  |  |  |  |
| Age of household head | 15-19 |  |  |  |  |  |  |  |  |  |  |  |  |
| 20-24 |  |  |  |  |  |  |  |  |  |  |  |  |
| 25-29 |  |  |  |  |  |  |  |  |  |  |  |  |
| 30-34 |  |  |  |  |  |  |  |  |  |  |  |  |
| 35-39 |  |  |  |  |  |  |  |  |  |  |  |  |
| 40-44 |  |  |  |  |  |  |  |  |  |  |  |  |
| 45-49 |  |  |  |  |  |  |  |  |  |  |  |  |
| 50-54 |  |  |  |  |  |  |  |  |  |  |  |  |
| 55-60 |  |  |  |  |  |  |  |  |  |  |  |  |
| 60+ |  |  |  |  |  |  |  |  |  |  |  |  |
| Age of respondent | 20-24 |  |  |  |  |  |  |  |  |  |  |  |  |
| 25-29 |  |  |  |  |  |  |  |  |  |  |  |  |
| 30-34 |  |  |  |  |  |  |  |  |  |  |  |  |
| 35-39 |  |  |  |  |  |  |  |  |  |  |  |  |
| 40-44 |  |  |  |  |  |  |  |  |  |  |  |  |
| 45-49 |  |  |  |  |  |  |  |  |  |  |  |  |
| 50-54 |  |  |  |  |  |  |  |  |  |  |  |  |
| 55-60 |  |  |  |  |  |  |  |  |  |  |  |  |
| 60+ |  |  |  |  |  |  |  |  |  |  |  |  |
| Gender of HH head | Male |  |  |  |  |  |  |  |  |  |  |  |  |
| Female |  |  |  |  |  |  |  |  |  |  |  |  |
| HH with regular income | Yes |  |  |  |  |  |  |  |  |  |  |  |  |
| No |  |  |  |  |  |  |  |  |  |  |  |  |
| Level of education of household head |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Toilet type | flushing |  |  |  |  |  |  |  |  |  |  |  |  |
| Pit |  |  |  |  |  |  |  |  |  |  |  |  |
| Grow cowpea |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Prepare Cowpea in HH meals | |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Whole, boiled with maize gritsa |  |  |  |  |  |  |  |  |  |  |  |  |
| Mashed & prepared as soup |  |  |  |  |  |  |  |  |  |  |  |  |
| Whole, boiled as relish |  |  |  |  |  |  |  |  |  |  |  |  |
| Otherb |  |  |  |  |  |  |  |  |  |  |  |  |
| Prepare Cowpea for children | Yes |  |  |  |  |  |  |  |  |  |  |  |  |
| No |  |  |  |  |  |  |  |  |  |  |  |  |
| Grow soybean | Yes |  |  |  |  |  |  |  |  |  |  |  |  |
| No |  |  |  |  |  |  |  |  |  |  |  |  |
| Prepare soybean in HH meals | Yes |  |  |  |  |  |  |  |  |  |  |  |  |
| No |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Flour |  |  |  |  |  |  |  |  |  |  |  |  |
| Soup |  |  |  |  |  |  |  |  |  |  |  |  |
| Porridge |  |  |  |  |  |  |  |  |  |  |  |  |
| Feed |  |  |  |  |  |  |  |  |  |  |  |  |
| otherc |  |  |  |  |  |  |  |  |  |  |  |  |
| Prepare Soybean for children | Yes |  |  |  |  |  |  |  |  |  |  |  |  |
| No |  |  |  |  |  |  |  |  |  |  |  |  |
| Community & Society factors | |  |  |  |  |  |  |  |  |  |  |  |  |
| Production increased |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Extension services accessed |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Income increased |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hired labor |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Food price increase experience |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cash for inputs availability |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Imported Food  Substitution |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Alternative food option |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Low input agriculture option |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Irrigation water access |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Social Protection |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Social Protection was for Covid 19 |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | | Model 1 | | Adjusted model | |
|  | | OR(95%CI) | p-value | OR(95%CI) | p-value |
| Total Children aged 6-23 months | |  |  |  |  |
| Met MMF | |  |  |  |  |
| Met MAD | |  |  |  |  |
| Consumed Micronutrients | |  |  |  |  |
| Consumed Cowpea | |  |  |  |  |
| Consumed Soybean | |  |  |  |  |
| Aged 6-8 months received complementary foods | |  |  |  |  |
| Age of children in months | 6-8 |  |  |  |  |
| 9-11 |  |  |  |  |
| 12-23 |  |  |  |  |
| Gender of children | Male |  |  |  |  |
| Female |  |  |  |  |
| Age of caregiver | 18-19 |  |  |  |  |
| 20-24 |  |  |  |  |
| 25-29 |  |  |  |  |
| 30-34 |  |  |  |  |
| >35 |  |  |  |  |
| Household factors | |  |  |  |  |
| Age of household head | 15-19 |  |  |  |  |
| 20-24 |  |  |  |  |
| 25-29 |  |  |  |  |
| 30-34 |  |  |  |  |
| 35-39 |  |  |  |  |
| 40-44 |  |  |  |  |
| 45-49 |  |  |  |  |
| 50-54 |  |  |  |  |
| 55-60 |  |  |  |  |
| 60+ |  |  |  |  |
| Age of respondent | 20-24 |  |  |  |  |
| 25-29 |  |  |  |  |
| 30-34 |  |  |  |  |
| 35-39 |  |  |  |  |
| 40-44 |  |  |  |  |
| 45-49 |  |  |  |  |
| 50-54 |  |  |  |  |
| 55-60 |  |  |  |  |
| 60+ |  |  |  |  |
| Gender of HH head | Male |  |  |  |  |
| Female |  |  |  |  |
| HH with regular income | Yes |  |  |  |  |
| No |  |  |  |  |
| Level of education of household head |  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Toilet type | flushing |  |  |  |  |
| Pit |  |  |  |  |
| Grow cowpea |  |  |  |  |  |
| Prepare Cowpea in HH meals | |  |  |  |  |
|  | Whole, boiled with maize gritsa |  |  |  |  |
| Mashed & prepared as soup |  |  |  |  |
| Whole, boiled as relish |  |  |  |  |
| Otherb |  |  |  |  |
| Prepare Cowpea for children | Yes |  |  |  |  |
| No |  |  |  |  |
| Grow soybean | Yes |  |  |  |  |
| No |  |  |  |  |
| Prepare soybean in HH meals | Yes |  |  |  |  |
| No |  |  |  |  |
|  | Flour |  |  |  |  |
| Soup |  |  |  |  |
| Porridge |  |  |  |  |
| Feed |  |  |  |  |
| otherc |  |  |  |  |
| Prepare Soybean for children | Yes |  |  |  |  |
| No |  |  |  |  |
| Community & Society factors | |  |  |  |  |
| Production increased |  |  |  |  |  |
| Extension services accessed |  |  |  |  |  |
| Income increased |  |  |  |  |  |
| Hired labor |  |  |  |  |  |
| Food price increase experience |  |  |  |  |  |
| Cash for inputs availability |  |  |  |  |  |
| Imported Food  Substitution |  |  |  |  |  |
| Alternative food option |  |  |  |  |  |
| Low input agriculture option |  |  |  |  |  |
| Irrigation water access |  |  |  |  |  |
| Social Protection |  |  |  |  |  |
| Social Protection was for Covid 19 |  |  |  |  |  |

Best Fit Model