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Full Length Research Paper

Cultural and Ethnical inconsistency in food insecurity status in Ethiopia

Notobosombo*, Denco Mac and Kebi Delrosario

Food Research Institute, Bahir Dar University, Bahir Dar, Ethiopia.

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In Ethiopia, a number of studies on food insecurity could be found although they did not explicitly consider ethno-cultural variables while they are very important determinants. The aim of this article was therefore to show the disparity between the Gumuz, Non-gumuz, and the Mixed ethno-cultures in their food insecurity status in Bullen district. Data were collected from 150 sample households and analyzed in an ethno-culture context. The household food balance model was employed to determine their food insecurity status. The results indicated that there were significant differences between ethno-cultures in their food insecurity status. The proportion of food insecure households of Gumuz, Non-gumuz and Mixed ethno-cultures were 62.5, 79 and 48.9%, respectively. Such a disparity existed due to difference in their cultural experiences and traditional values that affect their livelihoods and saving practices, which is also the case throughout Benishangul-gumuz Regional State. Therefore, the study recommends the ethno-cultural approach as appropriate tool for better understanding and addressing the food insecurity challenges in the study area as well as elsewhere.

Key words: Food insecurity, ethno-culture, Bullen, Benishangul-gumuz, Ethiopia.

INTRODUCTION

Ethiopia could not have ensured sustainable economic growth and food security. The recent two-digit economic growth rate the country is merely a superficial report. Poverty and food insecurity are likely to have become the identity of the country. Today, the country is one of the poorest and food insecure nations of the World (Shiferaw et al., 2003; USAID, 2004). Poor performance of agricultural sector, and both policy and non-policy factors are responsible for this (USAID, 2004). Findings from research have confirmed this fact and suggested some policy options (Degefa, 1996; Shiferew et al., 2003; USAID, 2004; Degefa, 2005; Eshetu, 2007; Alem, 2007; Messay, 2009, 2010, 2011, 2013; Guyu, 2011, 2012). For example, the proportion of poor people in the country that was 44% (48% for SSA) in 1990 (USAID, 2004) became 42.2% in 2000 (Brown et al., 2007), as compared to 48% for SSA (USAID, 2004), showing a 2.2% decline over a decade. These became about 60 and 51%, respectively in 2001 (FAO, 2001 cited in Shiferaw et al., 2003). Considering food insecurity alone, the proportion of food insecure population reached 44% in 2003 (USAID, 2004). Moreover, in 2000 the proportion of extremely poor households living below food poverty line of 1650 cal/person/day was 22.5% (Brown et al., 2007) while it was 5.2% in 2012 in Benishangul-gumuz regional state (BGRS) (MoA, 2012).

In BGRS, 58.1% of all households were poor (BGFSS, 2004) and 42% of under-five children were malnourished as compared to 54% in Southern Nations Nationalities and Peoples Region (SNNPR) and 14% in Addis Ababa

*Corresponding author. E-mail: kidan567@yahoo.com

(USAID, 2004). A study of rural food security in Bullen district also revealed 58% food insecure households (Guyu, 2011), a result similar to regional average. Surprisingly, the region is food insecure while it is environmentally stable so that the food insecurity situation can be termed as 'green famine'. The argument of this article is that cultural and hence ethno-cultural variables are important determinants of food security while the role of other factors should not be undermined. Thus, ethno-culture approach (ECA) to food insecurity as both methodological and policy instrument is suggested if a sustainable food security is to be ensured. The aim of the present article, however, is to show the disparity between ethno-cultures of Bullen district in food insecurity status as a validation of the approach for the purpose of universal application. At this juncture one should ask a question about the previous models of foods security: the food availability decline (FAD), food entitlement failure (FED) and sustainable livelihoods approach (SLA)?

Recognizing the importance of ethno-culture approach in assessing food security conditions, it should not be a miracle if studies employing the earlier approach could not solve the challenges of food insecurity. In these studies and approaches, the cultural dimensions have been either entirely overlooked or touched little while their role is substantial. For example, Daskon (2010) clearly shows how cultural traditions can affect people's capa-bility to sustain their livelihoods during times of vulnera-bilities to shocks, including food insecurity. It is likely that models and approaches to food security have experienced changes progressively somewhat in a linear fashion since early contributions of classical theorists such as Malthus (1889) and Boserap (1965). The works of Malthus (1889) and later that of Boserap (1965) show the implicit existence of the availability approach until the 1974 World Food Conference (WFC) (Devereux, 2001). Malthus's (1889) work shows how high population adversely affects food supply since land resources are scarce. In contrast, Boserup (1965) rejects the idea of Malthusians that high population places burden on economic growth and maintains that large family size which can increase agricultural productivity through intensive application of labor. Despite their contrasting views, both are likely to implicitly adopt availability approach.

Since 1970s, three major models have been in use for understanding a situation of food security. In the 1970s, FAD was employed to understand food security and food insecurity was understood as a failure in adequate availability of food at global or national levels and researches and policy-makers extensively employed the FAD model (Yaro, 2004). However, it gave way to the FED model in the early 1980s following the works of Sen (1981) emphasizing entitlement (Young et al., 2001; Yaro, 2004). The FED model defines food insecurity as lack of physical and economic access to food. It argues that food availability at macro-level never guarantees households and individuals access to food (Faridi and Waddod, 2010). Later arguing that the FED model is not holistic in nature, the SLA emerged (Scoones, 1998; DFID, 1999; Degefa, 2005; Alinovi et al., 2008). In the SLA, food insecurity is defined as vulnerable livelihoods (Devereux, 2001; Degefa, 2005) because a failure in livelihoods causes food insecurity. Such a shift in models from FAD to EFA and then to SLA is likely a non-stopping process that will proceed (Young et al, 2001). The ECA can be regarded as an aspect of this process of model creation. Although SLA is holistic and captures the dynamic nature of food security, it loosely incorporates culture as human or social capitals. This is the reason for proposing ECA to serve as a viable model for understanding a situation of food security.

MATERIALS AND METHODS

Bullen is one of the 21 districts of Benishangul-gumuz regional state (BGRS) located in Metekel Zone. For clarity, a Zone, in Ethiopia, is an administrative unit lower than a Region but larger than a district whereas, a district is such an administrative unit lower than a zone but larger than a 'kebele' and finally a 'kebele' is the smallest administrative unit lower than a district but larger than a village. Bullen is located north of the Nile (Abay) River which separates it from Yaso district of Kemashi Zone, located south of Abay River. The capital of the district, Bullen town, is located some 103 km from Gilgel Beles, the capital of Metekel Zone to the North, 760 km from Assosa (the regional capital) and 580 km from Addis Ababa to the Northwest. According to Agriculture and Rural Develop-ment office of Bullen, the total area of Bullen wereda is about 2,947 km2 (294,127 hectare). Administratively, Bullen district is sub-divided into 15 'kebeles' (administrative unit lower than district but larger than village in Ethiopia). While two of these 'kebeles' are parts of Bullen town, the remaining 13 make up the rural 'kebeles'.

Climatically, Bullen district is not uniform throughout. About 95% of the district is dominated by moist 'kola' (a type of humid tropical climate) while the remaining 5% is characterized by 'Weina Dega' (a type of temperate climate). The average annual rainfall of the district ranges from 700 to 1000 mm, whereas the average annual temperature ranges from 23.5 to 35.5°C. Topographically, the general elevation of the district decreases from East and Southeast towards the remaining directions ranging from 1900 to about 900 m a.s.l. in lower areas.

According to Central Statistical Agency [CSA] (2008) of Ethiopia, the total population of the district was estimated at 38,983 (20,026 males 18,958 females). Only 5751 or 14.8% of the population was urban dweller and the remaining 85.2% was rural population. With an estimated area of 2,857.97 sq. km, Bullen had a population density of 13.6 people per sq. km of land. According to the 1994 census result, the major ethnic groups of Bullen woreda are Shinasha (47%), Gumuz (33.5%), Amhara (9.8%), Oromo (8.1%), Agew (0.5%), and others (0.2%). Almost all, the Gumuz people settled in the remote rural areas of the study area. Moreover, the district was dominated by followers of Orthodox Church accounting for 65.1% of the total population. Followers of other faiths are insignificant such as traditional religion (21.5%), Muslims (9.8 %) and others (3.6 %). Figure 1 shows the location of Bullen district at regional and national levels. This ethnic information of the district is the basis for the formulation of the concept of ethno-culture and ECA model in this article.

Accordingly, BGRS consists of a number of ethno-cultures that can be categorized into three, namely the Indigenous, the non-indigenous and the mixed ethno-cultures. In a similar fashion, Guyu (2011) grouped the locally existing ethno-cultures of Bullen district

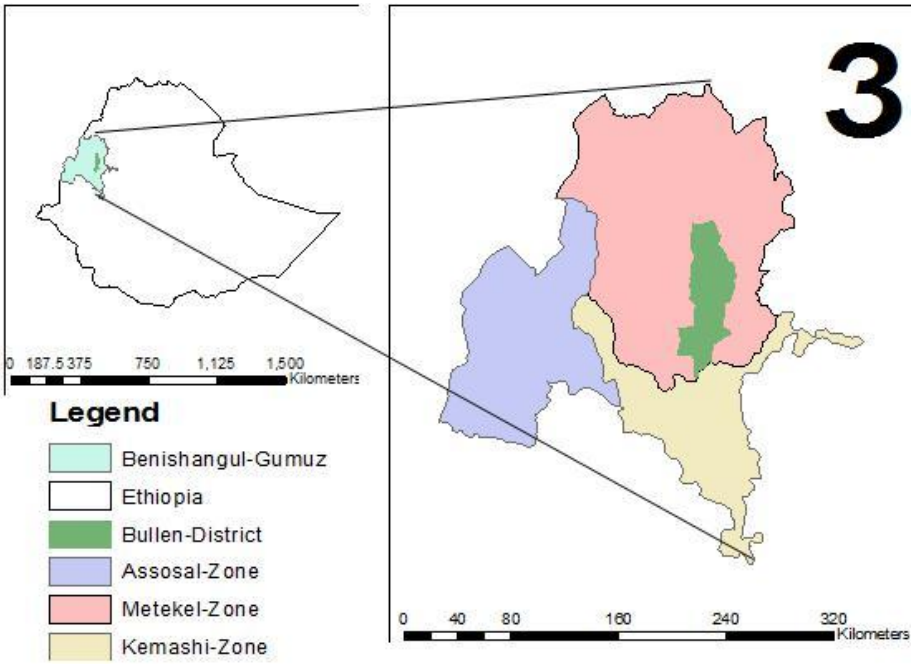

Figure 1. Location of Bullen District at regional and national settings.

into three, namely: the Gumuz (Indigenous), the non-Gumuz (can be indigenous or non-indigenous different from the Gumuz) and the mixed (both Indigenous and Non-indigenous) ethno-cultures. The Gumuz ethno-culture is taken as a distinct culture group because they have still reflecting the traditional ways of living and culture as compared to others, which may have an impact on food insecurity situation. Thus, this article could be considered the first of its kind in explicitly touching the ethno-cultural elements and proposing the ECA and using its idea to analyze the food insecurity situation in Bullen district and to extrapolate it to BGRS as a whole.

Accordingly, a cross-sectional design was employed to generate primary data from a questionnaire-based household survey in order to achieve the objective of the study. As such, a positivist paradigm that pursues rigorous quantitative techniques of data capturing and analyses were suggested to underlie the philosophical assumptions of the study. This was also supplemented by an interpretivist assumption as the limited amount of qualitative data from field observations and photographs were employed. Thus, it can be regarded as a mixed methods approach to food insecurity.

Primary data were collected from 150 randomly selected rural households from all ethno-cultures of the district. The data were, therefore, collected by trained enumerators with close supervision of the researcher. The data gathered were statistically analyzed using software known as Statistical Package for Social Sciences (SPSS) and also manually whenever relevant. Moreover, data from photographs and observation were analyzed qualitatively and used to supplement the quantitative results. The results were presented on tables, interpreted in the context of ethno-culture and extrapolated to BGRS as a whole and conclusions were drawn for the overall ethno-cultures of the region. A household food balance model (HFBM) was also employed to compute food insecurity status of household for all ethno-cultures.

For the purpose of acquiring a reliable data from the respondents, the respondents were guaranteed to be confidential in that any information they would provide should be secrete between them and the author. For ensuring confidentiality, they were informed that the study would be conducted to indicate the culture-related determinants of food insecurity and suggesting a solution for addressing problems of food insecurity better in the study area but for nothing else. Then, the informed consent of the respondents was assured before the actual survey. For this, they were even told to be free so that they can refuse to fill the questionnaire in what they feel uncomfortable. In the researcher's opinion, this had increased the reliability and consistency of the data from the instrument.

RESULTS AND DISCUSSION

As the findings of the study are often presented in tables, the presentation of the results, discussion and interpret-tation are conducted simultaneously in the context of ethno-cultures of the study area.

Sources of food supply by ethno-culture group

Basically, the economy of rural households in Ethiopia depends on agriculture, be it dominantly pastoral, arable or mixed farming system. Likewise, rural households in Bullen district depend on mixed agriculture where crop production and livestock rearing are simultaneously practiced. Regarding this, Guyu (2011) call the people in BGRS as a semi-pastoral community after observing that livestock production is equally important in the region. The failure of one of these sub-sectors seriously disturbs households' economy and most often results in seasonal food shortage. However, especially in the Gumuz ethno-culture areas where hoe-culture dominates, the cause of food insecurity is more of cultural than failure in farming

Table 1. Major sources of household grain supply by ethno-cultural group.

Sources of grain supply	Distribution of households by sources of grain supply						Total available grain	
	Non-Gumuz		Mixed Area		Gumuz Area			
	Amount (qtl)	Percentage	Amount (qtl)	Percentage	Amount (qtl)	Percentage	Amount (qtl)	Percentage
Own produce	497	85.4	1982.5	95.2	217	78.6	2696.5	91.7
Purchased grain	68	11.7	85	4.1	10	3.6	163	5.5
Borrowed grain	17	2.9	16	0.7	49	17.8	82	2.8
Total	582	100	2083.5	100	276	100	2941.5	100
Households size	38	25.3	96	64	16	10.7	150	100
Qtl/hh		15.3		21.7		17.3		19.61
Ave hh size		7.34		6.15		6.19		6.45
Per-capita qtl/year		2.08		3.5		2.7		3.1

systems. In short, the result of the study showed that the source of food for the surveyed households were own crop produced, purchasing and borrowing from neighbors and relatives (Table 1).

Table 1 shows that there was 2941.5 quintal of grains available for the whole surveyed households during the survey year in all ethno-cultures in the district. The average per capital grain available for the surveyed households in the mixed area (21.7qtl/hh) was better than the Gumuz (17.3 qtl/hh) and the Non-Gumuz (15.3 qtl) areas. However, this does not indicate the food security conditions of each ethno-culture area as it is a gross estimation from which post harvest grain lost and seed reserve should be deduced (which estimates the net dietary energy supply of households).

The overall contribution of own production, purchasing and borrowing accounted for about 91.7, 5.5 and 2.8% of the total annual food grain supply respectively during the survey year. Own production is a leading source of food for all ethno-culture areas. Accordingly, the ethno-culture distribution of each of these sources revealed that the source of grain for 85.4% of the Non-Gumuz, 95.2% of the mixed areas and 78.6% of the Gumuz areas was own produce. Similarly, the source of 11.7% of grain for the Non-Gumuz, 4.1% for Mixed areas and 3.6% for the Gumuz areas was from purchase while that of 2.9% for the Non-Gumuz, 0.7% for mixed areas and 17.8% for the Gumuz areas was from borrowed grain. This implies that food availability dimension is more important source than the access dimension (the entitlement set). However, different ways of interpreting the gross findings in Table 1 can be made.

The larger share of produced grain (95.2%) by the mixed ethno-culture areas obviously tells us that there is a reduced amount of purchased grain (41%) and almost non-existence of borrowed grain (0.7%). However, the lower level of purchasing power of these households may not be taken as an indicator of better agricultural performance as purchasing power itself may emanate from better income from sales of agricultural products. But, from the current figure, the extreme proportion of borrowed grain (0.7%) and the better per capita grain supply (3.5 quintals) may imply that households in mixed areas had practiced agriculture very well than the Non-Gumuz (with per capita quintals of 2.08) and Gumuz households (per capita quintals of 2.7).

Similarly, the larger percentage of purchased grain (11.7%) and smaller amount of borrowed grain (2.9%) in the Non-Gumuz ethno-cultures do not imply better agricultural performance. Relatively higher level of purchasing power of this ethno-culture area is followed by the ethno-culture's ability to adapt with food shortage by practicing non-farm income generating activities (IGAs) as a result, the non-farm IGAs are more diverse in these areas followed by the mixed ethno-cultures and the Gumuz ethno-culture areas.

On the other hand, the larger proportion of borrowed grain (17.8%) in Gumuz ethno-culture areas implies both cultural traditions and the seriousness of the shortage of food supply. Firstly, seasonal food shortage is most frequent and severe among the Gumuz areas than others due to extravagant consumption of grains soon after the post-harvest period, and secondly, there is culture of mutual help through grain borrows or sharing grain stock among same clan of Gumuz community whenever food shortage occurs. Such grain acquisition through grain borrowing and share and extravagant consumption are two popular cultures of the Gumuz ethno-culture that lead to seasonal food shortage in BGR in general and in Bullen district in particular.

Ethno-cultural disparity in dietary energy supply

As mentioned in the methodological section, ordinary HFBM was employed to determine the food insecurity status of households in the study area. As mentioned earlier, not all the food grain produced was consumed or sufficient to support a household throughout the year. Some of the produce could be lost in post-harvest period

Table 2. Net available grain for the sample households for the study year.

Source of grain	Ethno-cultural groups						All cases	
	Non-Gumuz area		Mixed area		Gumuz area			
	Quantity (qtl)	Percentage	Quantity (qtl)	Percentage	Quantity (qtl)	Percentage	Quantity (qtl)	Percentage
Purchased	68	11.7	85	4.1	10	3.6	163	5.5
Borrowed	17	2.9	16	0.8	49	17.8	82	2.8
Own produce	497	85.4	1982.5	95.1	217	78.6	2696.5	91.7
Total	**582**	**100**	**2083.5**	**100**	**276**	**100**	**2941.5**	**100**
PHL (10%)	49.7	8.5	198.3	9.5	21.7	7.9	269.7	9.2
Seed Reserve (5%)	24.9	4.3	99.1	4.8	10.9	3.9	134.8	4.6
Grain sold	17.5	3.1	122	5.9	48.5	17.6	188.0	6.4
NAG	489.9	84.1	1664.1	79.8	194.9	70.6	2349	79.8
No of hhs	38	25.3	96	64.0	16	10.7	150	100
Qtl/hh/year	12.9	-	17.33	-	12.2	-	15.7	-
Ave. hh size	7.34	-	6.15	-	6.19	-	6.5	-
Per capita qtl/year	1.76	-	2.82	-	1.96	-	2.4	-

due to attack by rodents and insects because of improper storage facilities, which might create unexpected depletion of household grain stock. Similarly, some of the grains might be sold for household expenses of certain commo-dities such as salt, soap, spices, etc while some amount is reserved for seed for the next harvesting season. And some amount might have been borrowed or gained through food aid when shortage occurs. Therefore, the amount of grain sold and losses should be deducted and the amount borrowed or gained through aid must be added to determine the net available grain (NAG) for estimation of daily dietary energy supply (DES) for a particular production year for a household. This can easily be captured using HFBM suggested by Degefa (1996) and later modified and used by several Ethiopian scholars and researchers (Alem, 2007; Degefa, 2005, 2010; Messay, 2009, 2011, 2013; Eshetu, 2007, Guyu, 2011). However, in the study area, food aid was not found to be a source of food grain supply rather only own production, purchasing and borrowing were the principal sources of food grain. In this article, these were considered in the HFBM in order to determine the NAG to a household as follows:

NAG = (OGP + GP + GB) – (GS + SR + PHL)

Where NAG = Net available grain for the household per year; OGP = own grain produce; GS = gain sold; GP = grain purchased; SR = seed reserved; GB = grain borrowed; PHL = post harvest loss.

For simplicity of data collection, many respondents are either reluctant to recall the amount or may roughly guess it, as suggested by Degefa (1996), seed reserve was taken as 5% of total production while that of post-harvest loss was estimated at 10% of total produce.

Accordingly, the NAG for the surveyed household for the year was 2349.025 quintals with average of 15.66 quintals /year/hh and per capita quantity of 2.43 quintal/year (Table 2).

The findings on Table 2 show that, the per capita NAG for all households was 2.4 quintal which is well over the average recommended amount (2.25 quintals) for a year. However, there was significant variation between different ethno-cultures. Despite the inter-household variations within respective ethno-culture group, on average there was better NAG (2.83 quintal) in the Mixed ethno-culture areas followed by the Gumuz areas (1.96 quintals) and the Non-Gumuz areas (1.76 quintals). The average grain supply in the mixed areas is well over the nationally recommended per capita annual grain requirement of 2.25 quintal, while the case in Non-Gumuz and Gumuz areas was much lower than the nationally recommended amount. This implies that much has to be done in order to achieve the average grain requirement in Non-Gumuz and Gumuz areas.

Grain produced and food insecurity status of ethno-culture groups

The food insecurity status of households in each ethno-culture area was determined based on the DES calculated from NAG (Table 3). Overall, the proportion of food secure households is much lower (42%) than the food insecure households (52%) in the district. The ethno-cultural distribution shows that the proportion of food secure (21.1%) households is much less than the proportion of food insecure households (78.9%) in the Non-Gumuz ethno-culture area. Similarly, the proportion of food security (51.1.%) is much less than the proportion

Table 3. Duration of feed on grain produced by food security status by ethno-culture group.

Ethno-cultural group		Duration of months of feeding on crop produced								Total	
		Months									
		3-5		6-8		9-11		>=12			
		No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Non-Gumuz	FS	0	0	0	0	4	50.0	4	50.0	8	21.0
	FIS	12	40.0	13	43.3	5	16.7	0	0	30	79.0
Mixed Area	FS	1	2.0	2	4.1	21	42.9	25	51.0	49	51.1
	FIS	20	42.6	15	31.8	9	19.2	3	6.4	47	48.9
Gumuz Area	FS	0	0	0	0	1	16.7	5	83.3	6	37.5
	FIS	2	20.0	6	60.0	2	20.0	0	0	10	62.5
All Cases	FS	1	1.6	2	3.2	26	41.3	34	53.9	63	42.0
	FIS	34	39.1	34	39.1	16	18.4	3	3.4	87	58.0
Total		35		36		42		36		150	100
Percent of total		23.3		24.0		28.0		24.0		100	

Table 4. Distribution of sample size in ae, its mean and standard deviation.

Result type	AE in Ethno-cultural area						All cases	
	Non-Gumuz area		Mixed area		Gumuz area			
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Total	243.43	29.79	491.41	60.15	82.09	10.06	816.93	100
Mean	6.40		5.12		5.13		5.44	
STD	2.63		1.94		2.52		2.25	

of food insecure (48.9%) in the mixed ethno-culture areas while the proportion of food security (37.5%) is much less than the proportion of food insecurity (62.5%) for the Gumuz ethno-culture areas.

Table 3 also shows the duration of feeding on crop produced by the households in each ethno-culture group. One very important finding in this table is that significant proportion of FIS households in all ethno-culture areas feed themselves on own grain production for very short period of time. For example, 40, 42.6 and 20% of FIS households in Non-Gumuz, in the mixed and in the Gumuz ethno-culture areas, respectively, feed their family only for 5 or less months in a year. In a similar fashion, the respective proportion of such FIS households that feed themselves only for 8 or less months was 83.3, 74.4 and 80%. This implies that almost all households in all ethno-culture areas depend on their own produce for much of the year while fulfilling the remaining months (4 months) by either purchasing or borrowing.

Dietary energy supply and food insecurity status of ethno-cultures

Determination of household food insecurity status requires the number of sample population in adult equivalent (AE) because the consumption level of all members of a household is not the same. It varies with age and physical condition of an individual. Table 4 shows the ethno-cultural distribution of sample population in AE.

The number of sample population in AE was 816.93 during the survey year. In other words, 29.79, 60.15 and 10.06% were in the Non-Gumuz, the mixed and the Gumuz areas, respectively. There were variations in the mean size of households in their AE among the three ethno-cultural groups (Table 4). Overall, on average, there were 5.44 people in AE in a household in the district with a standard deviation (TTD) of 2.25. Ethno-culture distribution shows that the mean size of AE in a household was 6.4, 5.12 and 5.13 for the Non-Gumuz, the mixed and the Gumuz ethno-culture, areas respectively. This implies that there was significant difference in the mean size of AE between ethno-cultures with a STD of 2.25 as well as in an intra-household distribution with a higher deviation in Non-Gumuz areas (STD = 2.63) followed by Gumuz areas (STD = 2.52) while the smaller deviation in a mixed areas (STD = 1.94). The implication is that there was a larger deviation in the number of AE from the mean size in the Non-Gumuz followed by the Gumuz and then by the mixed areas. The need for average AE is to calculate the average per capita calorie supply of a household and analyze the difference between ethno-cultures.

Table 5. Daily per capita dietary intake of sample households by sample 'kebeles'.

Sample (kebele)	Size of population and calorie supply		
	Total population (AE)	Total calorie	Mean cal/AE/day
Non-Gumuz	243.43	124329354.60	1399.28
Mixed Area	491.41	516991823.50	2882.35
Gumuz Area	82.09	50162632.00	1674.16
All cases	816.93	691483810.10	2319.02
Mean	5.44	4609892.07	1985.26
STD	2.25	6713384.30	1608.07

Table 6. Household distribution by dietary calorie supply and ethno-culture area.

Calorie supply as per AE/day		Ethno-cultural group						All cases	
		Non-Gumuz area		Mixed area		Gumuz area			
		No.	Percent	No.	Percent	No.	Percent	No.	Percent
<=1050 (50% of NRE)		10	26.3	12	12.5	3	18.8	25	16.7
1050-1575 (50-75% of NRE)		13	34.2	19	19.8	4	25.0	36	24.0
1575-2100 (75-100% of NRE)		7	18.4	16	16.7	3	12.4	26	17.3
2100-2625 (25% more than NRE)		6	15.8	12	12.5	1	6.2	19	12.7
2625-3150 (50% more than NRE)		-	-	13	13.5	2	18.8	15	10
>3150 (more than 50% more NRE)		5.3	7.9	24	25.0	3	18.8	29	19.3
Total		38	100	96	100	16	100	150	100
Total (%)			25.3		64.0		10.7		100
Food Security Status	< 2100cal (FIS)	30	78.9	47	48.9	10	62.5	87	58.0
	>=2100cal (FS)	8	21.1	49	51.1	6	37.5	63	42.00

The result in Table 5 revealed that the total dietary energy available for all surveyed households was 691483810.10 calorie with daily average per AE of 2319.02 calorie. This indicates that the average daily per capita dietary energy available for the surveyed population constituted 10.4% more than the national average value of 2100 cal/AE/day (Table 5). Without individual, household and ethno-culture differences, this implies that the overall district is food secure. The table shows that the mean per capita calorie supply of all ethno-cultures was 2319.2 calorie. There were significant differences in the mean per capita calorie supply between the ethno-cultures (STD = 1608.07 calorie). The ethno-cultural distribution in the mean per capita calorie supply shows that it was 1399.28, 2882.35 and 1674.16 calorie for the Non-Gumuz, the mixed and the Gumuz ethno-culture areas. This implies that only the mixed culture areas are on average food secure while both the Non-Gumuz and the Gumuz areas are well below the nationally recommended per capita energy required.

The result in Table 6 also revealed that there was disparity among the three ethno-cultural areas in dietary calorie intake and food insecurity status. 26% of households in the Non-Gumuz, 12.5% in the mixed and 16.7% in the Gumuz areas were characterized by calorie supply that is 50% less than the nationally recommended energy (NRE) supply of 2100 kcal. The interest here is to show the proportion of food insecurity status of households in different ethno-culture areas. As such, there were 78.9, 48.9 and 62.5% food insecure households in the Non-Gumuz, mixed and Gumuz ethno-culture areas respectively implying that much attention should be given to Non-Gumuz areas followed by the Gumuz ethno-culture areas than the mixed ones.

Like the case in food insecurity, as can be seen from Table 6 there is also a significant disparity between food secure households of the ethno-cultures (21.1, 51.1 and 37.5% for Non-gumuz, mixed and the Gumuz, respectively).

Household coping strategies by ethno-culture

Wild food as a source of food supply and coping strategy

Hunting and gathering as source of food supply are common practices in the district and in BGRS as a whole especially among the Gumuz community as a coping mechanism. Although the practice is the usual activity, it

Figure 2. A) Young Gumuz going to alcohol market. B) The People at alcohol market.

is most frequent during the periods of food shortage. However, these sources and practices are currently declining due to deforestation of the natural habitat for wild animals, fruits and roots. Households in all ethno-culture areas were asked whether they feed on wildfood by hunting or gathering from wild sources. Only about 30% of them replied that they were feeding on wildfood while the majority of them (70%) did not report that they feed on it. The reason for this, according to them is that currently the sources of wildfood are getting depleted seriously. Besides, hunting animals and destruction of forest is legally forbidden. This seems the reason for hiding the practice of hunting and gathering although according to the researcher's observation almost all Gumuz people of the district and BGR are engaged in gathering wildfood even though hunting is limited activity. But, there are still Gumuz households engaged in hunting of at least wild birds. The statistical analysis revealed that there was positive correlation (r = 0.231) between wild food consumption and food security of the households. But the Chi-square test revealed that its power to differentiate the food secure and food insecure groups was not significant at 0.01 probability level. The main reason for limited hunting, in addition to legal prohibition, is perhaps, due to the fact that the households have already handed over guns by which they hunt wild animals.

Other coping strategies than hunting and gathering

The food-insecure households in all ethno-cultures of the study area were not passive rather used to combat the problems of food shortage through different mechanisms. They are used to engage in numerous activities in order to minimize the impacts of food deficits in the household. Moreover, they used to change the feeding patterns and the amount, frequency and types of meal as well as selling of livestock and household utensils and ornaments such as gold, what Devereaux (2001) in his framework of coping strategies called adaptive strategies and asset disposal strategies respectively. Hunting and gathering wild food and local alcohol retailing as coping activities were reported by the 5.4 and 4.5% respectively from mainly the Gumuz area during the survey period. Whereas, traditional alluvial gold mining (1.8%), was exclusively reported from the Gumuz area. This is because of their access to areas which are rich in alluvial gold. On the other hand, sale of ornaments and engagement in daily labor reported by 6.7 and 2.9% of the respondents were typical coping mechanisms in the Non-Gumuz and the mixed areas. Despite its contribution to households' food security, local alcohol ('Araki') retailing activity was blamed for frequent incidence of food shortage in the Gumuz area and among the Gumuz ethnic groups. The key informants from the district offices and the Non-Gumuz people stated that the Gumuz people wasted much of their time walking long distances for buying 'Araki' even during critical seasons of land cultivation and harvesting crops. This inevitably contributed to the grain deficit for majority of the households among the Gumuz community.

Figure 2 shows young Gumuz with their plastic container for buying 'Araki', a local alcohol for trading (Figure 2A) and ultimately at alcohol market. This photo was taken during critical time (Mid May) of tilling and preparing land for sowing seeds for the next harvesting season. However, the young Gumuz were wandering in the town of Bullen in search of local alcohol ('araki'). Thus, it is easy to guess how much time they are wasting that would be invested in land cultivation.

Conclusion

The result of the study showed the prevalence of food insecurity in the study area where people are perceived to be food secure. Such a perception is due to the fact that there is adequate rainfall and relatively vast virgin land covered by green vegetation. This is because problems associated with food security are diverse, complex and inter-linked so that multidimensional approach is needed to tackle them. The current article was aimed to focus on the ethno-culture differences in the status of food insecurity in Bullen district and then to extrapolate the findings of BGRS as a whole. The article was also aimed at suggesting a new approach (ECA) for future use as an appropriate framework for analyzing food insecurity situations as a general model. The idea of ECA is considered after observing a number of approaches that have been utilized to address food insecurity problems in Ethiopia but none has well addressed the problem. It is, therefore, thought that cultural variables are more important than other environmental and economic factors, or these occur as a function of cultural factors. Promising to formulate and test the ECA model in the forthcoming article by the author, the current article investigated the disparity in the status of food insecurity between different ethno-cultures of Bullen district as a validation of ECA.

Accordingly, there was significant difference in food insecurity status between the three ethno-cultures of the district. There were 79% of food insecure households in the Non-Gumuz ethno-culture areas as compared to 48.9% in the Mixed areas and 62.5% in the Gumuz ethno-culture areas of Bullen district. This disparity can also be inferred to BGRS as the people in the region can be grouped in a similar fashion as those in Bullen district. The indigenous, non-indigenous and the mixed ethno-cultures is appropriate way of grouping and understanding the situation of the region. In conclusion, cultural variables seem to be more important than the environmental and socioeconomic factors for assessing food insecurity situation of BGRS in general and in Bullen district in particular. This is not a blind conclusion but drawn from long-term observation of food insecurity situation (green famine) under green covered environment. The region is well endowed with natural resources and sufficient precipitation. However, people in the region, mainly the indigenous (the Gumuz ethno-culture) suffer most from seasonal food shortage every year. Thus, this article recommends that the future research direction should focus on investigating cultural factors of food insecurity employing the ECA model. This model can capture the ethno-cultural variable directly and the environmental and socioeconomic factors as a function of ethno-culture factors of food insecurity. Thus, as will be shown in the forthcoming article, this model acts as a dynamic one that can holistically capture all dimensions of food insecurity while scaling up the importance of ethno-cultural variables.

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