

MEASURING RED MEAT INTAKE IN LOW SOCIOECONOMIC SOUTH AFRICAN CONSUMERS

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Abstract - In order to determine the effect of the consumption of animal products on human dietary exposure in South Africa (SA), correct intake data is required for the total population. There is a significant lack of South African food intake data, and available data is mostly skewed towards specific populations and age groups. Data collection on red meat consumption is further complicated by the lack of consistency in the definition of the food group, and a lack of the description of edible portion including portion size and bone content. Another constraint in a country with such a diverse population distribution is the lack of appropriate tools to gather data within the various socioeconomic groups. In this paper, data collection tools for the resource scarce, illiterate poor, were developed and rolled out. Findings regarding the red meat consumption of groups with very low socioeconomic standards, levels of education and limited access to resources are reported.

Key Words – data collection tools, food intake, measurement, nutritional exposure

I. INTRODUCTION

The livestock sector is expected to provide safe, affordable and nutritious food for growing populations, to provide a livelihood for producers, to preserve natural resources and use them efficiently, and to minimize health risk to human populations [1]. Towards this, current and relevant data is needed to guide production, processing and policy development, and equip the red meat industry with the background information required to re-align consumer education projects and environmental policy, thereby ensuring the sustainability of the livestock sector, while contributing positively to the health status and food security of populations.

Within South Africa (SA), a significant lack in national food intake data for all population and

socioeconomic groups is recognized [2]. There were only 4 large well conducted studies reported in the period 2001 to 2010, but all of these were targeted at selected population and age groups. Most published studies further only report the nutrient intake of the population, and do not refer to the actual foods which were consumed. As a result, and to enable the industry to remain dynamic, the Red Meat Industry of SA undertook a research project to determine the red meat intake and perceptions of all South Africans.

Gathering red meat consumption data is complicated by numerous factors, including the lack of consistency in the definition of the food group, and the lack of the description of edible portion including portion size consumed, and the bone-content of the food portion [3]. Furthermore, in developing countries, such as SA, another significant constraint to consumption is the lack of appropriate tools to gather data within the various diverse socioeconomic groups. The diversity of the SA population spreads from households with very low living standards, educational levels and resources, to groups which have very high living standards, levels of education and resources.

To enable the collection of accurate data, specific tools, relevant to the population in question, need to be available. Subsequently, the development of questionnaires suitable to each socioeconomic group, as well as visual aids in the form of portion size photo books and picture boards for illiterate communities, were developed as the first outcome of the study as a first step. The questionnaire, portion size photo book and picture board developed for data collection within low socioeconomic groups were rolled out within one of the nine provinces identified as the province with the highest proportion of low socioeconomic households in SA [4]. Results of this initial phase of the project are presented.

II. MATERIALS AND METHODS

The SA living standard measurement (LSM) tool is a unique means of segmenting the market into LSM groups. This tool cuts across race and other outmoded techniques of categorizing people, by grouping people according to their living standards using criteria such as degree of urbanisation and ownership of cars and major appliances. In Table 1 selected demographic figures for the different LSM groups in SA are presented [4].

During the current study the SA population was divided into three groups, the first group incorporating households from LSM 1 to 4 with very low living standards, the second group incorporating upcoming households from LSM 5 to 8, and a third group included high living standard households from LSM groups 9 and 10.

Table 1: LSM breakdown of the South African population [4]

LSM	Percentage of total population	Urban	Rural	Limited or no schooling	Monthly household income	
					<\$100	>\$2500
1	3.5	0	100	41.2	19.4	0.0
2	7.3	8.3	91.8	32.4	20.5	0.0
3	7.8	12.0	88.1	23.8	12.2	0.2
4	14.2	33.3	66.7	19.7	10.5	0.1
5	15.2	57.6	42.4	10.6	4.9	0.5
6	19.5	80.9	19.8	6.3	1.5	1.8
7	10.2	88.0	12.1	2.7	0.3	8.0
8	7.6	93.5	6.5	1.0	0.1	16.7
9	8.5	93.1	6.9	0.4	0.1	33.3
10	6.3	92.8	7.5	0.0	0.0	61.5

The 1st group (LSM 1 to 4) which is reported on in this article encompasses the population of SA which is the most difficult to investigate, as the majority of these households are located in rural and peri-urban areas, and a great percentage of adults have limited or no schooling. SA has 11 official languages which further complicates the gathering of information within these groups. The questionnaire was simplified and adopted to accommodate not only the animal products available on the shelves, but indigenous wild animals and birds which are consumed from time to time by these consumers.

Although household heads within these LSM groups are able to recall what they have eaten in the past, it is often very difficult to estimate how much was consumed as they have limited comprehension of volume and size units. To overcome this barrier, a picture board with photographs of red meat products were used to prompt identification of *what* was consumed, after which 4 portion size photographs per cooked product were presented in a photo book to enable visual identification of the amount consumed during focus group discussions.

These tools were rolled out in Limpopo province, which is one of the nine provinces with the highest ration of low socioeconomic households in the country. Ten questionnaires were completed per villages, with two villages identified in each of four of the five municipal areas in Limpopo (n=80). In addition, one focus group was conducted in seven of the eight villages, each including between five and ten respondents (n=61) [5], amounting to seven focus groups in total.

III. RESULTS AND DISCUSSION

A summary of the results from the study indicates that red meat were purchased from multiple sources, with the most popular sources being retail, butchers and informal traders as influenced by availability of the source and household income. Within the varying income available to households in the different districts, purchasing of red meat took place once a month at month end when grants and formal salaries (very few for the LSM 1, 2 and 3) were payable. This finding is consistent with literature [6].

Almost all the respondents consumed a combination of red meat types (usually at least three types), with most choice sets containing at least beef and offal. Differences between districts were mostly guided by availability and price. Poultry meat, beef and offal were consumed by almost all households, followed by fish (93.8 %), eggs (92.5 %), sheep meat (78.8 %), goat (71.3 %) and pork (17.5 %). Overall the three most popular animal foods included beef, offal and sheep or goat meat. Red meat is a preferred food, yet in comparison to poultry, eggs and fish, red meat products were consumed by more households, but

less often. The animal protein foods consumed by the majority of households were poultry, beef and offal. Average weekly consumption frequencies indicate the dominance of poultry at 3.1 times per week, compared to only 1.0 and 0.9 times per week for offal and beef respectively. If red meat was consumed, though not even once a week, it usually occurred during week-ends (Table 2).

Table 2: Weekly consumption of animal products

Product	Share of households consuming product (%)	Times consumed / week
Poultry	100	3.1
Eggs	92.5	2.1
Fish	93.8	1.3
Offal	98.8	1.0
Beef	100	0.9
Mutton/lamb	78.8	0.2
Goat	71.3	0.2
Pork	17.5	0.1

From the seven focus groups beef offal, ox liver and braaiwors were the products consumed in the biggest volume on average per capita per month. The range for these items were recorded from as little as 25 g for offal and ox liver and 23 g for braaiwors, to as much as 450 g for ox liver, 375 g beef offal and 300 g braaiwors. Although the amount of ox liver consumed on average is low, the amount consumed per occasion was recorded as high at 450 g per capita. Although beef without bone were consumed in smaller amounts (65 g on average), it was consumed by the household of at least one respondent from each focus group, as was beef offal (Table 3).

It is of interest that the more affluent groups in two of the seven focus groups enjoyed a substantial higher intake of beef without bone, beef mince, braaiwors, biltong, ox liver, and beef offal than the rest. A further distinctive difference was the consumption indicated for sheep meat by this group, of which mutton chops were gifts.

Table 3: Amount of red meat (g) consumed per capita per month

Red meat product	Average (g)	Responses (n = 7)	Range (g)	
			Min	Max
Beef no bone	65	7	23	174
Beef 20% bone	38	6	19	64
Beef stir fry	70	2	60	150
Beef mince	43	5	13	58
Braaiwors	106	7	23	300
Biltong	47	4	10	83
Ox liver	172	3	25	450
Beef offal	238	7	25	375
Mutton	40	1	-	-
Mutton chops	150*	2	-	-

*Gift

The importance of beef offal, braaiwors and beef without bone, as source of more affordable red meat in the diet of the lower socio-economic households in Limpopo, became clear. Overall, relatively small quantities of the different red meat types were consumed by most respondents per month. These values are also notably less than what was found from a desktop survey of published literature on food intake in SA [7]. The 1999 National Food Consumption Survey recorded surprisingly high intake of meats (most probably including chicken) and offal in children at between 45 g to 56 g per day (1.35 kg to 1.68 kg per month), while the PURE Study indicated that black adults consume 26 g of red meat (780 g per month) and 18 g offal per day (540 g per month) [7,8,9].

IV. CONCLUSIONS

From the first set of results available for the study, the following conclusions were reached:

- Overall, the limitations imposed by (lack of) household income for food expenditure, and specific for the purchasing of red meat, were notable
- Red meat is a valued item, yet it is consumed in limited quantities, which are probably lower than previously documented
- Beef offal, braaiwors and beef with and without bone were the most popular red meat items
- The photobook was a valuable tool in focus group discussions to determine the portion

size of animal products consumed as it provided a higher level of comprehension.

V. RECOMMENDATIONS

The study of low LSM consumers is to be further rolled out in the other provinces in SA to verify the findings for the marginalised consumer (LSM 1 to 4).

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