

NUTRITIONAL CHALLENGES IN MILITARY HISTORY: AN ANALYSIS OF ROMANIAN SOLDIERS' DIET DURING WORLD WAR II

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Abstract: *This study provides a historical review of the nutritional challenges faced by Romanian soldiers during World War II, analyzing their daily caloric intake and its implications for physical performance and combat readiness. Based on historical records, the estimated daily caloric intake ranged between 1.240 and 2.160 kcal, significantly below modern military nutrition standards. The research highlights the inadequacy of these rations in meeting the physical and cognitive demands of military service. Furthermore, the heavy reliance on staple foods such as corn and bread, along with limited protein sources, exacerbated malnutrition among soldiers. These findings emphasize the critical role of proper military nutrition in sustaining combat effectiveness and overall health. A comparative analysis with contemporary military dietary standards underscores the advancements in military nutrition and the necessity of providing adequate sustenance for personnel in active service.*

Keywords: military nutrition, historical diet, World War II, Romanian soldiers, caloric deficiency

1. Introduction

The caloric requirements for military personnel are subject to variation according to several factors, including gender, the level of activity at rest, the nature of training or missions undertaken, and the presence or absence of low or high temperature conditions.

Military personnel receive training for deployments and to respond to specific crises, such as disaster evacuations and counterterrorism operations. Those engaged in such missions may be required to live partially or fully on individual operational rations for extended periods. It is imperative that the nutritional content of these rations be sufficient to maintain health, combat readiness, and performance—both physical

and cognitive. Given the wide range of tasks military personnel perform during operational deployments, their daily energy expenditure can vary from sedentary to strenuous physical labor. In accordance with the standards established by NATO's STANAG, the recommended daily caloric intake for routine missions, such as peacekeeping and firefighting, is 3.600 calories per day. However, for combat missions or special forces nature, the recommended daily intake is increased to 4.900 calories per day [1].

2. Rural Population and Food Scarcity According to the 1930 census, 90.4% of the working rural population was engaged in agriculture, which constituted

the primary source of income for most rural residents. The main agricultural activities included land cultivation, cattle breeding, viticulture, and fruit growing. The rural population predominantly lived in precarious conditions. A survey of 303 peasant households conducted in 1935 revealed that 35% of their gross income derived from the cultivation of cereals, vegetables, and industrial plants, 22% from animal husbandry, and 42% from non-agricultural activities [2]. A subsequent study of a sample of 424 peasant households, ranging in size from 2.5 to 15 hectares, for the period 1930-1934, revealed that these households were not economically viable [3]. The gross income of these households was insufficient to cover the expenses associated with cultivating the land, their labor, and the amortization of the capital invested in the household. The unfavorable economic condition of these families was not attributable to waste. Food constituted the bulk of the family budget. The diet of most of the peasant population was in all respects inadequate to ensure health and a high level of productivity. The diet was characterized by a lack of diversity. In nearly all regions of Romania, corn constituted the primary staple food [4].

In nearly all regions of Romania, corn constituted the primary dietary staple. In Muntenia, Oltenia, and Dobrogea, maize constituted 70-95% of all cereals consumed, while in Bucovina and Transylvania, the proportion was 50%, with the remaining 50% being replaced by wheat or rye. The primary method of corn consumption was through polenta. A diet dependent on a single food is generally considered unhealthy due to its deficiency in essential nutrients necessary for growth and

protection against disease. The diet of the peasant population was characterized by a general paucity of variety in food consumption. Milk was a crucial element in this diet, and its absence had a substantial impact on the intellectual and physical development of children. The primary factor contributing to this low consumption was the scarcity of cows. In 1935, of the 3.5 million rural families, nearly 2 million lacked cows, while 1.5 million lacked pigs. Meat was a rarity for most households. Studies conducted prior to the onset of the Second World War, between 1930 and 1939, in select regions of Moldova, revealed that the annual per person consumption of meat was 4-8 kg. While variations in consumption were observed across different regions of Romania, a general trend indicated that peasants in Moldova consumed less meat compared to their counterparts in other European countries. Potatoes were the most consumed vegetables, especially in Transylvania and Bucovina, as well as in the mountainous regions of other provinces [4, 5, 6]. The state of health of the population was substandard due to inadequate nutrition. Moreover, rudimentary living conditions and the lack of basic hygiene contributed to the overall poor situation.

3. Historical Context of Romanian Military Diet

The following example illustrates a weekly menu for Romanian soldiers during the Second World War in 1939: On the first day, the soldiers would consume tea with bread in the morning, bean soup at lunch, and beans with ham in the evening. On the second day, the soldiers' diet consisted of tea with bread in the morning, a meat broth with noodles at lunch, and bean soup with ham in the evening. The third day's menu

featured tea with bread in the morning, meat broth with noodles at lunch, and broth of tomatoes with rice in the evening. On the fourth day, the meal consisted of tea with bread in the morning, meat broth with noodles at lunch, and the following dietary plan is recommended for Day 1: consume tea with bread in the morning, bean soup at lunch, and beans with ham in the evening. For Day 2, the plan is to have tea with bread in the morning, meat broth with noodles for lunch, and bean soup with ham in the evening. On the third day, the meal plan is as follows: tea with bread in the morning, meat broth with noodles for lunch, and tomato broth with rice in the evening. On the fourth day, the plan is to have tea with bread in the morning, meat broth with noodles for lunch, and potato broth with rice in the evening. On the fifth day, the plan is to have tea with bread in the morning, meat broth with noodles for lunch, and potato broth with rice in the evening. On the sixth day, the plan is to have tea with bread in the morning, followed by bean soup for lunch and broth of potatoes with barley in the evening. On the seventh day, the plan is to have tea with bread in the morning, followed by a broth of meat and macaroni for lunch, and bean soup in the evening [7].

4. Nutritional Analysis of Military Rations

Prior to Romania's entry into the Second World War, the production of bread entailed a blend of wheat flour and 20 to 45% maize flour, with rye or barley flour occasionally substituted. Following Romania's entry into the war, bakers in Bucharest were obligated to combine 6 kilograms of wheat flour, 2.5 kilograms of maize flour, and 1.5 kilograms of wheat bran to produce a 10-kilogram loaf. In the city of Timisoara, by the mid-

1942 period, a blend of wheat flour and pea flour was utilized. However, by the year's conclusion, a notable shift in the composition of this blend had occurred. Specifically, it contained 30% wheat flour, with the remaining 70% comprising a combination of barley flour (40%), potatoes (20%), beans (5%), and millet (5%). This shift in composition was driven by the prevailing scarcity of bread, which prompted authorities to issue a call to the populace, encouraging them to consume polenta on days when bread was unavailable [7].

Table 1. World War II frontline menu for Romanian soldiers and calories count

Name of the food	Kcal/100g
Tea with sugar added	10
Bread (wheat 20%, corn 45%, and rye flour 35%)	100
Bean soup	95
Beans with ham	290
Meat broth with noodles	270
Bean soup with ham	200
Broth of tomatoes with rice	240
Meat with cabbage	250
Broth of potatoes with rice	280
Broth of potato with barley	280
Broth of meat with macaroni	270

Table 2. The number of calories per day of Romanian soldiers in World War II

Numbers of days	Kcal/day by menu per 200-300g/portion
Day 1	880 – 1.265
Day 2	1.050 – 1.520
Day 3	1.130 – 1.640
Day 4	1.170 – 1.700
Day 5	1.111 – 1.760
Day 6	860 – 1.235
Day 7	840 – 1.205

Since soup and main dishes cannot be served without bread, we can add four slices of bread (400 kcal) for each day,

corresponding to lunch and dinner. An approximate calculation of daily caloric intake indicates a range between 1.240 and 2.160 kcal per day. From a nutritional perspective a diet based on a caloric intake of 1.240 kcal per day for an individual weighing seventy kilograms results, this is in a caloric deficit. It is not recommended for use in military combat situations [8, 9].

5. Conclusions

The analysis of the dietary intake of Romanian soldiers during World War II reveals substantial discrepancies between their actual caloric consumption and the recommended energy requirements for military personnel engaged in physically demanding activities. The estimated daily intake of 1.240 to 2.160 kcal per day falls substantially below the NATO-recommended 3.600 kcal for routine missions and 4.900 kcal for combat or special operations. This discrepancy is likely to have adverse consequences on soldiers' physical endurance, cognitive function, and overall health, thereby compromising their combat readiness and operational effectiveness.

A comparison between historical and modern military nutritional standards underscores the evolution of military rations and the increasing emphasis on ensuring adequate sustenance for troops. The limited diversity in the diet, heavy reliance on staple foods like corn and bread, and inadequate protein intake further contributed to nutritional deficiencies. The issue was further compounded by the substandard living conditions and economic hardship experienced by the rural population during that period, as many soldiers enlisted with already compromised nutritional health.

From a strategic and logistical standpoint, ensuring sufficient and well-balanced nutrition for military personnel is imperative for maintaining physical performance and morale. The findings of this study underscore the imperative for adequate caloric intake, meticulously tailored to the demands of military operations. Future research could further explore the long-term health impacts of caloric deprivation in historical and contemporary military settings, as well as strategies for optimizing nutritional intake under field conditions.

References

- [1] NATO STANDARD AMedP-1.11 Requirements of individual operational rations for military use Edition B Version 1, April 2019.
- [2] Manuilă, S. & Georgescu, D.C., *Populația României*, p.50-159.
- [3] Golopenția A., Starea culturală și economică a populației rurale din România, *Revista de igienă socială*, 10/1-6, 1940, p. 240-246.
- [4] Golopenția A., Gradul de modernizare al regiunilor rurale ale României, *Sociologie românească*, 4/4-6, 1939, p. 209-217.
- [5] Hitchins K., *România 1866-1947*, Ediția a V-a, Humanitas București, p.374-383.
- [6] Șandru D., *Populația rurală*, p. 137-159.
- [7] Hrib, D. A., Teodorescu, R. A. & Roman, T. C. (2020). *Food will win the war*, Editura Muzeului Național Brukenthal, Sibiu, p.32-33.

- [8] Sotelo-Díaz, I., & Blanco-Lizarazo, C. M. (2019). A systematic review of the nutritional implications of military rations. *Nutrition and Health*, 25(2), 153-161.
- [9] Glushkov, P. (2017). Use of linear optimization model in defining the new standards for the preparation of food for servicemen in preparation for participation in peacekeeping operations. In *International conference Knowledge-Based Organization* (Vol. 23, No. 2, pp. 65-70).