

**FUNCTIONAL ANALYSIS OF KITCHEN AND FOOD
MANAGEMENT IN ELDERLY HOUSE (MDPS)
IN RYBNIK**

SUMMARY REPORT

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About the report:

This document is a short executive summary of the study on MDPS in Rybnik carried out by Tomasz Szuba between 22-26 September 2020. The key purpose of this activity was to investigate structure, quantity, reasons, and value of food waste in MDPS. The main report (written in Polish) has been divided into 3 chapters:

1. Chapter I: quantitative analyses in different possible formats e.g. by day, meal, diet, dish, location within the facility, etc. focusing on volume, structure of production and food waste;
2. Chapter II: qualitative analysis of meals' management, organisation of work of kitchen's personnel, analysis of the menu, and last but not least - storage rooms management;
3. Chapter III: presenting key conclusions and recommendations that should lead to reducing food waste.

The report defines:

- food waste as food prepared by kitchen staff but not eaten by residents of the MDPS (which excludes food prepared by residents themselves. It is possible but rarely used). More specifically food waste was analysed in a few key aspects, such as: a) leftovers on plates: including its structure, volume and place of origin in the facility – as meals were eaten in the canteen but also directly in rooms on 3 floors); b) food prepared, served but not eaten by residents: other than leftovers; c) food prepared, not served and not eaten by residents;
- overproduction as food prepared but not eaten by residents at specific meal (could have been eaten after scheduled meal). Overproduction does not automatically equal food waste. Tea, bread or butter not consumed directly at breakfast or dinner were usually also eaten later throughout the day.

Quantitative analyses show both: a) food including served beverages such as: tea, coffee, compote, etc.; as well as b) food excluding beverages.

Context:

During the study, MDPS hosted 143/144 residents (69% females and 31% males). It included 56 diabetic diets (with 12 so called mixed or blended meals), 70 easily digestible diets (with 26 mixes), 25 easily digestible mixed diets, 2 liver and 3 dairy-free diets. 38 residents eat in the canteen, including 16 diabetic and 9 easily digestible diets. Dietary meals are consumed by residents both in the canteen and in their rooms. Some of residents are on wheelchairs whereas some are immobilized – those require individual feeding by MDPS personnel. Out of 144 residents, 60 of them have dementia. Residents have the opportunity to cook individually in small kitchens located on the floors. During pandemic and with assistance from MDPS personnel, they can also purchase additional food in grocery stores. Before COVID-19, MDPS in its premises run a small kiosk with additional food to be bought by residents. It was closed down due to pandemic restrictions. To feed its residents, MDPS uses own kitchen and prepares breakfast, lunch (always consists of soup and a second course), and dinner.

In the kitchen MDPS employs 9 people including executive chef. There are also 2 additional staff: one is dietician and storage room manager, another is dietician also responsible for purchasing raw materials. The daily rate for meals is PLN 10.50 per resident (equivalent of ca. EUR 2,3¹). Total food cost (FC) per year is at the level of 575,000 PLN (equivalent of ca. EUR 128,000). For food and accommodation residents pay up to 70% of their monthly allowances (e.g. state pension, family, or local self- government).

Quantitative analyses and results:

Analyses focused on volume and structure of both production and food waste per meal/dish/day/resident. The difference between production and food waste provides information on what and how much is actually eaten by residents. The key challenge is always to limit safety production buffer (in general kitchens produce more than people actually eat) as nobody wants to deal with dissatisfied residents or clients due

¹ 1 EUR=4,5 PLN

to shortage of food. The problem is that usually safety production buffers are disproportionately too large in comparison to what and how much is actually eaten. This is also the problem of MDPS that leads to food waste.

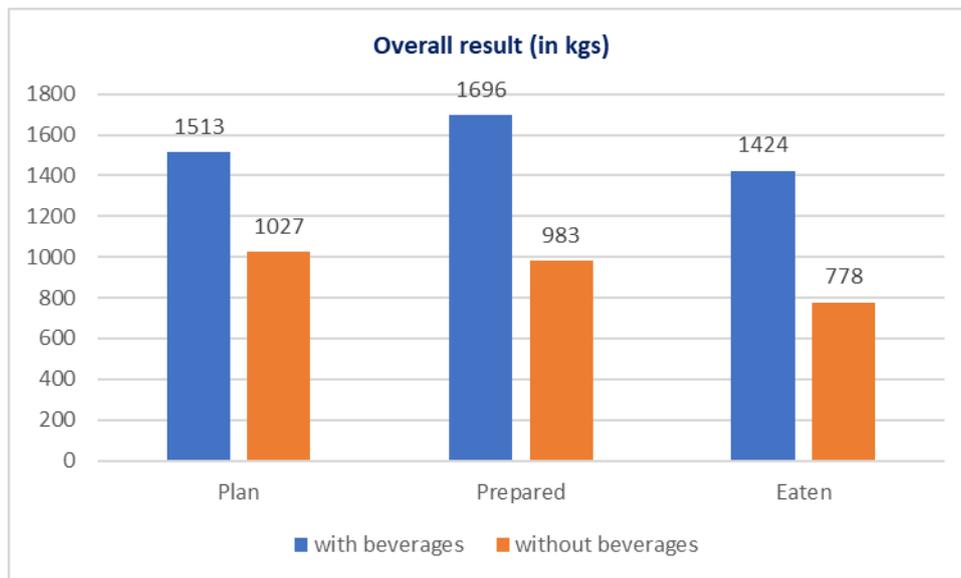
Key results are the following:

- during 5 days of analyses, a total of 1696 kg of food and beverages were prepared for all 15 meals, of which 1424 kg were consumed (including beverages such as: coffee, tea, compote). If beverages are excluded from calculations: MDPS prepared 983 kg of food, out of which only 778 kg were consumed;
- on average, the kitchen prepares 339.2 kg of food and drinks (or 155.6 kg without beverages) per day;
- in total - during 5 days: 272 kg of food and beverages were discarded (daily average: 54.4 kg) - or 204 kg without beverages (daily average of 41 kg);
- during 5 days of analyses, residents consumed 84% of food and beverages prepared and served, or 79% if beverages are excluded from calculations;
- on average, MDPS prepares 2.35 kg per person per day including beverages or 1.37 kg without drinks;
- average resident eats and drinks 1.98 kg of food/beverages per day (or 1.08 kg excluding beverages);
- the excessive difference between what is prepared and what is eaten/drunk (per day and per capita) is 0.37 kg (or 0,29 kg if beverages are excluded from calculations);
- if MDPS limits overproduction and food waste (including beverages), the daily rate of FC could be reduced to the amount of PLN 8.85 per resident.² The difference between PLN 10.5 (current daily rate) and PLN 8.85 (optimal FC on condition food waste is reduced) is PLN 1.65 (ca. EUR 0,37) per resident and day. This is the amount of maximum possible savings if food cost per resident/day is reduced. If beverages are excluded from calculations, then

² If 2.35 kg costs us PLN 10.50 then 1.98 kg costs PLN 8.85.

optimal amount of savings per day and per resident would reach PLN 2,12 (ca. EUR 0,47).

Fig. 1: overall result of quantitative analyses in kgs



Forecast:

- food waste per year amounts to 19,9 tonnes (15 tonnes excluding beverages)³;
- up to PLN 90000 (equivalent of ca. EUR 20 000) can be saved by reducing food waste per year (16% of yearly budget) – or PLN 116 000 if beverages are excluded from calculations⁴;

³ If average food waste including beverages per day is 54,4 kg (or 41 kg excluding beverages), then multiplying those numbers by days for one year they amount to 19,9 and 15 tonnes.

⁴ If MDPS prepares 2,35 kg of food and drinks per day/resident and it costs PLN 10,50, then 1,98 kg consumed might cost PLN 8,85. Excluding beverages from calculations and assuming beverages per day/resident cost PLN 0,5; then 1,37 kg of food prepared by MDPS per day/resident costs PLN 10. Residents actually eat 1,08 kg, which by proportion should cost PLN 7,88. Now – if we multiply monetary difference between what is produced and what is actually eaten per resident/day by number of residents and number of days per year, we will come up with: PLN 1,65 x 150 residents x 365 days = PLN 90 000; or excluding beverages: PLN 2,12 x 150 residents x 365 days = PLN 116 000.

- reducing food cost by PLN 90000(or PLN 116 000 when beverages are excluded) is not the total financial gain. Other operational costs linked to food processing could therefore also be reduced, such as: labor, water, electricity, garbage collection and utilisation, etc.

Potential gains go beyond financial or monetary aspects: they are both socio-ethical and environmental.

Top 9 recommendations:

1. Management and personnel should study the report and draw own conclusions. Processed data should be in the center of internal discussions.
2. Personnel should measure both production and food waste on a daily basis. If you measure the waste you can manage the waste.
3. Level of daily production and portion size should be reduced.
4. Verification of menu should be conducted to eliminate those dishes that generate too much food waste.
5. Menus should be also discussed with residents to take into account their culinary preferences.
6. Recipes should be written down and verify in practice.
7. Menus should be planned in time perspective longer than current 7 days.
8. Improve both formal and informal information flow on food and food waste between kitchen staff, other personnel, and management (one of the idea is to organize short periodical staff meetings). Info on changes in diets, absenteeism, etc. among residents should be communicated to kitchen in a more efficient way.
9. Changes to menus and introduction to new tastes should be linked with food waste measurement.

Illustration how to generate savings from reducing food waste – example of a soup:

One day during analyses vegetable soup was served. Kitchen personnel prepared 37 kg of it. To prepare vegetable soup chef used: chicken - 2,12 kg; turkey - 1,3 kg; additional meat - 0,93 kg; vegetable mix - 7,5 kg; dill - 2 kg; flour - 1 kg; sour cream -

1,5 kg; potatoes - 7 kg. Altogether food cost per vegetable soup this day was PLN 83,81.

In reality, residents have eaten 23 kg of vegetable soup (and not 37 kg prepared by kitchen staff). The loss is 14 kg. If MDPS adjusted production to how much is actually eaten by residents, it should prepare perhaps 25 kg of vegetable soup (assuming safety buffer of 2 extra kg of soup). 25 kg is 33% less than actual production of 37 kg. By proportion, raw materials used to cook the soup should also be reduced by 33%. The food cost of preparing 25 kg of vegetable soup should then be PLN 56,16. Generated savings per vegetable soup would thus be PLN 27,65 (ca. EUR 6,14). The same mechanism should be applied to all prepared dishes by MDPS.