

ORIGINAL RESEARCH

Nutritional intake and foodservice satisfaction of adults receiving specialist inpatient mental health services

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Abstract

Aim: Meeting the nutritional needs and foodservice expectations of hospital inpatients is challenging. This study aimed to determine whether adults receiving specialist inpatient mental health services meet their energy and protein requirements and are satisfied with the foodservice.

Methods: An observational study of adults admitted to three specialist inpatient mental health services within a large health service. Energy and protein intake were determined over 24 h via observation, and nutritional requirements were estimated using standard procedures. Validated questionnaires were used to assess satisfaction with the lunch meal, elements of the foodservice system, and overall foodservice satisfaction.

Results: Among 74 participants, the median (IQR) energy intake (6954 [5111–10 250]kJ/day) was less than estimated requirements (8607 [7319–9951]kJ/day), whilst protein intake (85 [62–120]g/day) exceeded requirements (59 [46–70]g/day). Food from external sources was consumed by 50% of participants. Satisfaction surveys found vegetables were rated more poorly than the meat or carbohydrate portion of the meal, food quality was rated lowest compared with meal service, staffing and physical environment. The majority of participants (89%) rated their last meal as average, with the remainder (11%) rating it as poor.

Conclusion: There are opportunities to improve the meal and foodservice experience for this patient group to meet their nutritional requirements and expectations. Investment in quality food and menus that are appropriate for the demographics, exploration of the most appropriate foodservice system, and adequate dietetic resourcing are needed to improve nutrition care within specialist inpatient mental health services.

KEYWORDS

foodservice, hospital, mental health, nutrition, satisfaction

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1 | INTRODUCTION

In Australia one in five (20%, or 4.8 million) Australians reported that they had a mental or behavioural condition during the 12-month period from July 2017.¹ Individuals with mental health conditions are likely to suffer comorbidities, particularly physical health problems,^{2,3} with 11.7% (1.9 million) Australians reporting both a mental disorder and a physical condition.³ National Health Survey data indicates a range of lifestyle factors are present, which contribute to and compound mental and physical health problems.¹ One third of individuals with mental health conditions consumed sugar sweetened drinks daily, one fifth did not meet the recommendations for consumption of fruit and vegetables, and one fifth consumed alcohol in excess of guidelines.¹ The Australian Government has a range of policies and plans in place to support the mental health of Australians, and access to appropriate healthcare including specialist inpatient services.⁴

People who require hospitalisation for a mental health condition are a unique population, different to those admitted for care for physical health conditions. The national average length of stay in a public acute hospital psychiatric unit is 15.7 days compared with that of the general population where the average length of stay in a public hospital is 5.7 days.⁵ People aged 35–44 and 18–24 years have the highest rate of admissions for specialist mental health care, which is younger than many patients admitted with chronic conditions.⁶ Balancing risk of chronic disease⁷ and malnutrition⁸ in this patient cohort is at odds with the challenges of addressing the inpatient malnutrition prevalence in many other hospitalised patients. The Agency of Clinical Innovation have produced dedicated Nutrition Standards for consumers of inpatient mental health services, reflecting the uniqueness and priority of their food and nutrition needs.⁷ They identify that disability and other physical and mental health conditions, along with medication side effects, dictates the need for the broader foodservice system to be flexible to meet these patients' complex needs.⁷ However, dedicated Nutrition Standards do not exist in all states of Australia.

The challenge for health service delivery is to provide a menu and foodservice system that meets the needs of a range of different patient groups simultaneously. This is particularly difficult in hospitals where specialist inpatient mental health services are collocated with patients admitted for physical health conditions. Constraints to the systems and contracts in place for meal ordering, production, plating and the skills and schedule of the foodservice workforce can limit flexibility. In turn, this may impact patients' nutritional intake, further

compounding their physical and mental health conditions, and influence their experience of meals and mealtimes. The foodservice provided to specialist inpatient mental health services is further complicated by dietetic staffing pressures within the acute hospital system.⁹ Although the collocation of specialist inpatient mental health services can support patients to engage with physical health care,¹⁰ access to dietetic services may be challenging within collocated service models.

The present study aimed to determine whether adults receiving specialist inpatient mental health services meet their energy and protein requirements and are satisfied with the foodservice.

2 | METHODS

This observational study was reported using the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.¹¹ Approval to undertake this research was received from the Eastern Health Human Research Ethics Committee (reference QA57-2016).

The setting was a large multi-site health service with a catchment of more than 750 000 people in Victoria, Australia. The study was undertaken in the adult (aged 18–65 years) mental health units collocated at the two largest hospitals (one ward at one hospital [site A] and two wards at another hospital [site B]), each ward accommodated 25–30 admissions. Collection of participant-level social and medical history was outside the scope of the ethics approvals for this study, however due to the broad admission criteria it is likely that participants were heterogeneous in terms of their mental health diagnoses and other characteristics. There were no differences in admission procedures to the units, nor any differences in the menus provided.

The healthcare network operates a cook-chill foodservice system, where the majority of meals (soups, main meals, desserts) are prepared off-site at a large central production kitchen, prior to being delivered chilled to the hospitals. At site A meals were plated cold and rethermalised and at site B food was heated in bulk and plated hot in the hospital kitchen prior to distribution to patients at mealtimes. Meals were delivered by a patient service assistant and patients on the mental health wards ate in a communal dining room. The menu throughout the healthcare network was a 4-week cycle menu for main meals and static menu for mid meals, with an additional barbeque meal for adults admitted to specialist inpatient mental health services every 1–2 weeks. At site A the foodservice system was contracted to an external provider and at site B the foodservice system was managed by an in-house workforce. Meal ordering using

paper menus occurred up to 48 h prior to meal service with meal service at 8 a.m., 12 midday and 5 p.m.

Senior nursing staff identified a convenience sample of patients to be observed each day. In selecting patients to be invited to participate, staff considered patients' mental health status and length of stay. Patients with less severe mental health symptoms who had longer lengths of stay were invited preferentially so that they had sufficient time to experience the foodservice system. Observational data were collected during a 3-week period in late-2016, with dietary intake of participants observed for 1 day. A maximum of nine patients were observed each day, with a predicted sample size of 70–90 participants accounting for patient discharge and new admissions.

The primary outcomes were intake of energy (kJ/day) and protein (g/day) and satisfaction with the foodservice. During the day of observation, the intake of all main meals was estimated by trained observers using the validated one-quarter method,¹² while intake of mid-meals and snacks was self-reported by patients at the next meal period (the following day for supper intake). Intake records were analysed using the detailed hospital dietetics ready reckoner to estimate energy (kJ/day) and protein (g/day) consumption for the 24 h period. NUTTAB 2010 within Foodworks 7.0¹³ was used to determine the energy and protein content of foods consumed that were from sources external to the hospital menu.

Age, gender and weight (measured by nursing staff on admission) were collected from medical records. Height was derived from ulna length measured with a tape measure according to a recommended process.¹⁴ Energy requirements were estimated using the Schofield equation¹⁵ (applying 1.3 activity factor, no stress factor), with protein requirements estimated according to the Nutrient Reference Value.¹⁶ To calculate requirements, if participant BMI < 30 kg/m² actual weight was used, whilst if BMI ≥ 30 kg/m² adjusted ideal body weight ($[(\text{weight} - \text{IBW}) * 0.25] + \text{IBW}$, where IBW is weight at BMI = 25 kg/m²) was used.¹⁷ The percent of estimated requirements met by intake was determined.

Satisfaction with the foodservice system was evaluated using the Acute Care Hospital Foodservice Satisfaction Questionnaire,¹⁸ a tool developed for use within the acute hospital setting. This survey includes 18 statements measuring aspects of foodservice satisfaction using a 5-point Likert scale (“always”, “often”, “sometimes”, “rarely” or “never”). Responses are converted to a numerical value and a score is derived for satisfaction with four domains; food quality score, meal service quality score, staffing/service issues score, and physical environment score. Domain scores were calculated where there were

TABLE 1 Demographic details of the adults receiving specialist inpatient mental health services ($n = 77$)

Variable	All participants
Age, years (median [IQR])	36 (29–47)
Gender ($n, \%$)	
Male	40, 52
Female	37, 48
Length of stay at data collection, ^a days (median [IQR])	5 (2–15)
Body mass index, ^b kg/m ² (median [IQR])	23.9 (21.1–27.4)
Body mass index ^b ($n, \%$)	
Underweight (BMI < 20 kg/m ²)	9, 13
Healthy weight (BMI 20–25 kg/m ²)	32, 46
Overweight/obese (BMI > 25 kg/m ²)	29, 41
Estimated energy requirements, ^c kJ/day (median [IQR])	8607 (7319–9951)
Estimated protein requirements, ^c g/day (median [IQR])	59 (46–70)

^aData missing for one participant.

^bData missing for seven participants.

^cData incomplete for nine participants.

complete responses for all required statements. One statement of overall satisfaction is measured using a 5-point Likert scale (“very good” to “very poor”).

The Meal Assessment Tool¹⁹ was utilised to assess satisfaction with a particular meal. This tool uses a seven-point Likert scale (“excellent” to “very poor”) to rate the flavour and taste, appearance and quality of the meat or meat alternative, potato or other carbohydrate source, and the vegetables, of the last meal received. Responses are converted to a numerical value. One additional question assesses whether the meal met expectations using a 5-point Likert scale (“very good” to “very poor”). These surveys were administered verbally with each participant after the midday meal on the day of obtaining their 24 h food intake. Researchers determined whether the participant received the meal they ordered, or whether a default meal was provided.

Data collection was performed by trained nutrition and dietetics students from Monash University. All students received 1 day of training by the principal investigator in the accurate estimation of intake to reduce inter-rater variation in measurement and to complement their pre-existing skills in dietary assessment. A pair of data collectors (breakfast/lunch and lunch/dinner) observed and estimated intake of three or four patients per meal. Students also received site orientation prior to commencing data collection with a focus on safety procedures within the inpatient mental health setting.

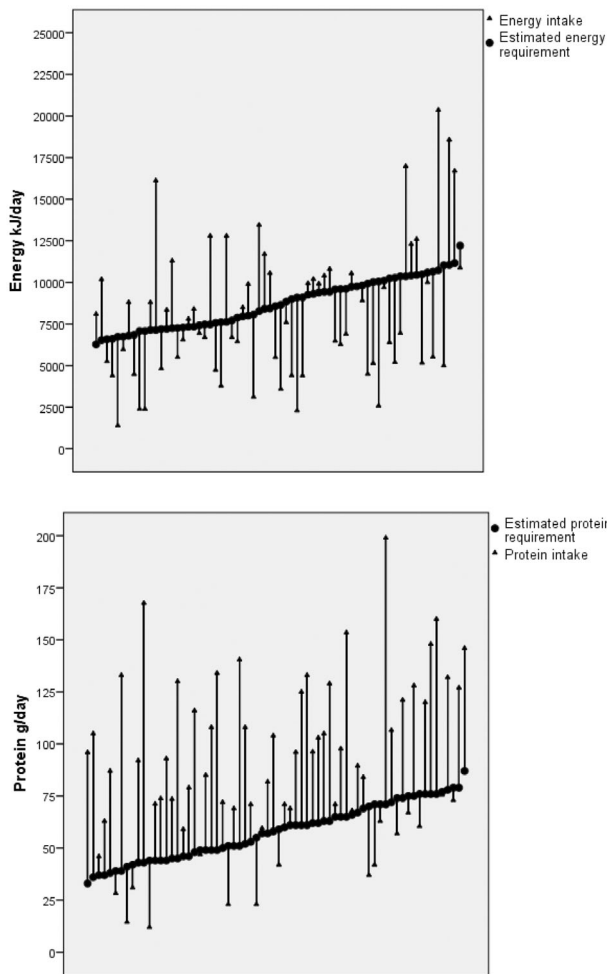


FIGURE 1 Comparison of estimated requirements and intake of energy and protein of people receiving specialist inpatient mental health services ($n = 68$).

Descriptive analyses of demographic characteristics, nutritional intake and satisfaction with the foodservices were performed using IBM SPSS Statistics for Windows (Version 22.0. Armonk, NY: IBM Corp.). To ascertain parametricity, Shapiro–Wilk normality tests along with skewness and kurtosis were assessed for all variables. Median and interquartile range (IQR) were reported for non-normally distributed continuous variables, mean and standard deviation (SD) were reported for normally distributed variables and number (n) and percentage (%) were reported for categorical variables. Analyses were completed with available data.

3 | RESULTS

In total, 77 patients were recruited over the 3-week data collection period, described in Table 1. Over 40% were overweight or obese, and nine (13%) were underweight.

There was a large range in energy and protein requirements due to body composition and gender differences (Figure 1).

Two participants had leave of absence from the ward at dinner, an additional patient was discharged during the day of their observation. Data from these patients were removed from the original $n = 77$, leaving $n = 74$ records for nutritional analysis. Among the group with complete 24 h intake records, the median total intake of energy was 6954 kJ/day (IQR 5111–10 250, range 1400–20 359) and the median intake of protein was 85 g/day (IQR 62–120, range 12–199). There were 43% (29/68) of participants who consumed $\geq 100\%$ of their energy requirements and 77% (52/68) who consumed $\geq 100\%$ of their protein requirements; the remaining participants (57% for energy, 23% for protein) did not meet their estimated requirements. At the group level, the variability in the requirements and intake of participants was large. Figure 1 plots the requirements (circle) and the intake (triangle) of each participant to illustrate the difference between these at the individual level, and across the group. Half of participants (37/74, 50%) consumed food from external sources. Where participants chose food in addition to the hospital menu, the energy provided by external sources was often large (median 1648, IQR 800–2903 kJ/day). Two participants consumed all of their daily intake from external sources on the day of observation.

Only 8–50% of participants completed their menu each day, resulting in the majority of participants receiving a default meal. This was due to several factors including patients reporting they were not aware that they could choose meals, and patients forgetting to complete the menu order.

The Acute Care Hospital Foodservice Satisfaction Questionnaire and Meal Assessment Tool satisfaction surveys were completed in full by 63 of 77 (82%) participants. Four participants did not complete the Acute Care Hospital Foodservice Satisfaction Questionnaire survey at all, and responses to single items were missing for up to 10 participants. Two participants did not eat any component of their meal, and a further three did not eat the meat component and therefore were unable to provide responses for these sections of the Meal Assessment Tool.

Satisfaction with the foodservice overall received an average rating of 2.9 out of 5 (correlating to “good”), where 5 indicates higher satisfaction. This was derived from ratings of very good ($n = 25$, 34%), good ($n = 26$, 36%), average ($n = 15$, 21%), poor ($n = 4$, 5%) and very poor ($n = 3$, 4%). Acute Care Hospital Foodservice Satisfaction Questionnaire data demonstrated participants were least satisfied with the food quality, and most satisfied with staff/service and the physical environment (Table 2).

TABLE 2 Satisfaction of people receiving specialist inpatient mental health services with items and domains of foodservice assessed using the Acute Care Hospital Foodservice Patient Satisfaction Questionnaire.²²

Aspect of foodservice ^a		Rating (mean ± SD)
Food quality domain (<i>n</i> = 64)		2.6 ± 1.0
Q.1 (<i>n</i> = 73)	The hospital food has been as good as I expected	2.8 ± 1.2
Q.5 (<i>n</i> = 71)	I am able to choose a healthy meal in hospital	2.9 ± 1.3
Q.8 (<i>n</i> = 72)	I like the way the vegetables are cooked	2.5 ± 1.3
Q.9 (<i>n</i> = 73)	The meals taste nice	2.7 ± 1.1
Q.13 (<i>n</i> = 73)	The menu has enough variety for me to choose meals that I want to eat	2.6 ± 1.4
Q.16 (<i>n</i> = 73)	The meals have excellent and distinct flavours	2.4 ± 1.2
Q.18 (<i>n</i> = 68)	The meat is not tough and dry ^b	2.5 ± 1.3
Meal service quality domain (<i>n</i> = 64)		3.3 ± 0.7
Q.7 (<i>n</i> = 69)	The cold drinks are just the right temperature	3.4 ± 1.0
Q.10 (<i>n</i> = 68)	The hot drinks are just the right temperature	2.9 ± 1.3
Q.14 (<i>n</i> = 69)	The cold foods are the right temperature	3.6 ± 0.8
Staff/service issues domain (<i>n</i> = 68)		3.7 ± 0.5
Q.3 (<i>n</i> = 73)	The staff who deliver my meals are neat and clean	3.8 ± 0.7
Q.11 (<i>n</i> = 71)	The staff who take away my finished meal tray are friendly and polite	3.7 ± 0.7
Q.15 (<i>n</i> = 70)	The staff who deliver my meals are helpful	3.6 ± 0.8
Physical environment domain (<i>n</i> = 71)		3.4 ± 0.8
Q.2 (<i>n</i> = 72)	The crockery and cutlery are not chipped and/or stained ^b	3.5 ± 1.0
Q.4 (<i>n</i> = 73)	The hospital smells do not stop me from enjoying my meals ^b	3.3 ± 1.2
Q.6 (<i>n</i> = 72)	I am not disturbed by the noise of finished meal trays being removed ^b	3.4 ± 1.1
Statements not belonging to a domain		
Q.12 (<i>n</i> = 63)	I like to be able to choose different sized meals	2.8 ± 1.4
Q.17 (<i>n</i> = 73)	The hot foods are just the right temperature	3.2 ± 1.1
Overall satisfaction (<i>n</i> = 73)		2.9 ± 1.1

^aResponses coded from 5 to 1 (always/often/sometimes/rarely/never); higher satisfaction denoted by ratings closer to 5.

^bQuestions and responses were reverse-coded according to tool guidelines.

TABLE 3 Satisfaction with components of the lunch meal assessed using the meal assessment tool.²³

Meal component ^a	Poor (1, 2), <i>n</i> (%)	Average (3–5), <i>n</i> (%)	Good (6, 7), <i>n</i> (%)	Rating (mean ± SD)
Meat/meat alternatives (<i>n</i> = 68)				
Flavour and taste	5 (7%)	28 (41%)	35 (52%)	5.2 ± 1.6
Appearance	6 (9%)	31 (46%)	31 (45%)	5.0 ± 1.7
Quality	4 (6%)	32 (47%)	32 (47%)	5.1 ± 1.6
Starch (potato, rice, pasta, cous cous) (<i>n</i> = 70)				
Flavour and taste	5 (7%)	32 (46%)	33 (47%)	5.1 ± 1.6
Appearance	7 (10%)	26 (37%)	37 (53%)	5.1 ± 1.7
Quality	8 (11%)	27 (39%)	35 (50%)	5.1 ± 1.7
Other vegetables (<i>n</i> = 71)				
Flavour and taste	12 (17%)	29 (41%)	29 (41%)	4.7 ± 1.9
Appearance	13 (18%)	27 (38%)	31 (44%)	4.7 ± 1.9
Quality	12 (17%)	26 (37%)	32 (46%)	4.7 ± 1.9

^aHigher satisfaction denoted by ratings closer to 7.

Satisfaction with the components of the lunch meal, assessed using the Meal Assessment Tool, are presented in Table 3. Vegetables were the meal component that rated the poorest. When asked to compare the overall lunch meal to their expectations, 11% ($n = 8$) rated it as poor, 89% ($n = 62$) rated it as average, whilst no participants rated it as good.

4 | DISCUSSION

In this study of 74 adults receiving inpatient services for mental health conditions, almost half of the participants met their estimated energy recommendations and three-quarters met their estimated protein recommendations. Results identified variability and inconsistencies among participants in their satisfaction with meals and the foodservice system. This disconnect between intake, estimated nutritional requirements and expectations is likely to occur because patients in specialist mental health inpatient facilities are recipients of meals and foodservice not designed for them. When health services are collocated at the same hospital, and in the absence of Nutrition Standards for patients in mental health facilities in Victoria, the menu and foodservice is oriented to an older patient demographic where issues of taste preferences, malnutrition, and dysphagia are prevalent.

This study serves as a baseline for exploring the consumer perspective on the meals, eating experience, and nutrition intake of hospitalised adults receiving specialist mental health services. With increasing prevalence and funding⁶ to support people with mental health conditions, it is important that the food and nutrition needs of this cohort are understood, that this information is acted on to put appropriate nutrition care strategies in place and that the dietetic profession is shaping this future. There is evidence that individualised dietetic intervention can provide cost-effective nutrition care for people with mental health conditions,²⁰ but the foodservice system is a platform offering greater reach and delivery of nutrition care to all inpatients.

Literature indicates the foodservice system is a significant determinant of patient satisfaction, and the choice, timing and delivery of food are the most important factors in determining younger patients' satisfaction.²¹ A review of strategies to reduce plate waste in hospital recommended foodservice systems that give patients choice, allow selections to be made as close to the mealtime as possible, and promote social interaction at mealtimes.²² Therefore, making changes to the systems for ordering, plating and distribution of food for patients with mental health conditions, and the settings where meals are consumed, have the potential to increase satisfaction and

intake. Such strategies include spoken menu systems,²³ the use of dining rooms,²⁴ room service,²⁵ a la carte style menus and electronic bedside meal ordering.²⁶ Although not previously reported as being implemented for patients receiving inpatient specialist mental health services, aspects of these models may better align with the younger adult population.

Regrettably, little research has been reported internationally of the nutritional intake and satisfaction of inpatients admitted to units providing specialist mental health services. A study of nutritional intake and foodservice satisfaction undertaken within collocated acute physical and mental health services simultaneously is recommended to enable comparisons and a broader understanding of the food-related issues facing each of these patient groups. Consideration of nutrients beyond energy and protein was beyond the scope of this study, however this is likely to be of clinical interest in this patient cohort and should be undertaken in the future.

This study provides useful lessons for designing future studies in collecting food related information from adults admitted to inpatient mental health facilities. There was a level of inconsistency between the results received (where many patients were satisfied) compared with the observation of half the participants sourcing at least some food from external sources in the observation day. This brings into question the relevance and understanding of foodservice satisfaction surveys more generally. The value of quantitative surveys in the literature whereby the concept that patients think and evaluate in a continuum of satisfaction has been challenged.²⁷ Some authors have indicated that patients display a more critical nature when they are given an opportunity through open ended questions or other qualitative approaches, and hence uncover greater dissatisfaction.²⁷ Therefore, further exploration of the foodservice satisfaction of this patient group through qualitative approaches may be valuable. Observation of the meal, through approaches such as ethnography,²⁸ may also provide valuable insights.

Challenges in collecting intake data in hospitalised patients are also acknowledged. This study used the validated one quarter method, with data collected on hard copy forms and manually collated. Recent innovations such as electronic measurement of plate waste (e.g., Mobile Intake system) have been validated²⁹ and may provide some efficiencies to this process. Despite not providing the accuracy of weighed food data, time is saved through the use of such systems because recording of food intake occurs once at the bedside which is automatically synchronised to the menu and food composition data.

There are several limitations associated with the methods utilised for determining nutrient requirements, intake and food composition. It is acknowledged that

1 day of observation may not represent usual intake, but it provides a useful snapshot and has been utilised in other point prevalence studies.³⁰ The use of hospital ready reckoners to estimate some nutrient analyses and the convenience sampling method within this study are also acknowledged as limitations. The absence of more detailed anthropometric data and any biochemical change data limits the strength of conclusions able to be drawn from the study findings. Also, we were unable to report physical and mental health diagnoses due to ethics restrictions placed on the research.

This is one of the first studies to explore food service for hospitalised adults with mental health conditions. We advocate for greater consideration of how the dietetics profession can meet the food and nutrition needs and promote a positive foodservice experience for this patient group. This requires a well-planned menu, careful selection of systems for production, ordering, plating, and distribution of food, and adequate investment in foodservice systems and workforce. We also encourage nursing staff and other members of the mental health team to advocate for improved foodservice provision in healthcare. Their presence and influence within their units is vital to improve food and nutrition for this vulnerable group.

AUTHOR CONTRIBUTIONS

JP and JC conceived and co-ordinated the study, ran the statistical analysis and wrote the manuscript. Both authors have approved submission of this version of the manuscript.

CONFLICT OF INTEREST

Judi Porter is the Editor-in-Chief of Nutrition & Dietetics and was excluded from the peer review process and all decision-making regarding this article. This manuscript has been managed throughout the review process by the Journal's Editor. The Journal operates a blinded peer review process and the peer reviewers for this manuscript were unaware of the authors of the manuscript. This process prevents authors who also hold an editorial role to influence the editorial decisions made. Jorja Collins has no conflict to disclose.

DATA AVAILABILITY STATEMENT

The data reported in this paper are not publicly available due to privacy or ethical restrictions.

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