Mindfulness-based nutritional therapy as a scientific link between nutrition and psychological factors in the inpatient treatment of psychiatric disorders: an intervention study

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Theoretical background

The relationship between dietary habits and mental illness is an area of psychiatric care research that has not yet been extensively studied. Research into different diets focuses in particular on nutritional quality and the intake of specific nutrient groups, as well as the varying effects in a psychosomatic context. The findings are currently still ambivalent, and it is difficult to establish causal relationships using controlled studies. Both previous nutrition-specific studies and the S3 practice guidelines in psychiatry and psychotherapy of the DGPPN show the high relevance of health-promoting measures in the treatment of mental illness [1]. Current research findings are subject to limitations with regard to a mindfulness-based perspective on nutrition and its influence on mental health. Maladaptive, regulatory-based eating patterns can be associated with mental illness, in which eating behaviors serve as coping strategies on a cognitive level or are the result of dysfunctional compensatory volition [2]. Apart from nutritional mechanisms of action and due to ambivalent research findings, recent studies have shifted their scientific focus to cognitive processes associated with disorder-specific eating behavior. The influence of mindfulness-based interventions in the context of third-wave psychotherapy on the improvement of psychopathogenic symptoms has been comprehensively documented. Mindfulness-related aspects have also been shown to be significant in the context of nutrition [3]. However, the number of studies in the application-oriented psychiatric setting is still very limited. This intervention study aims to address this research

Methods & Sample

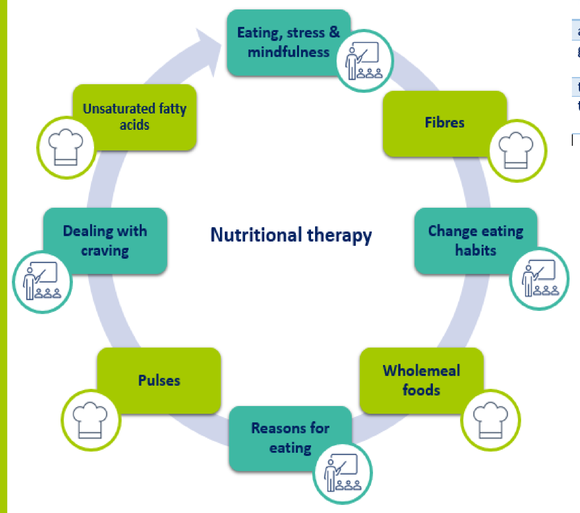


Fig. 1: Cyclical sequence of nutritional therapy intervention modules.

Tab. 1: Sample description.

age	52 (min = 21; max = 72)
gender	female = 28 (40 %) male = 42 (60 %)
treatment duration (d)	55 (min = 27, max = 143)
treatment setting	inpatient = 39 (55,71 %) semi-inpatient = 33 (47,14 %)

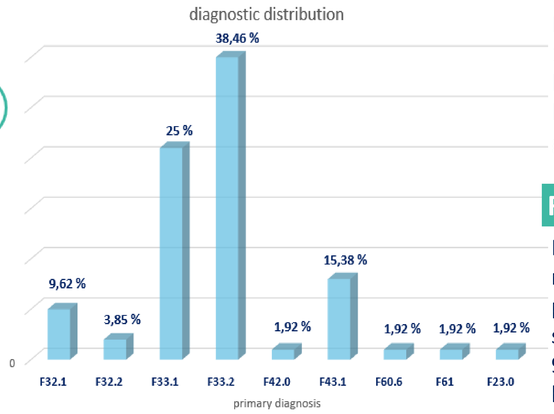


Fig. 2: Diagnosis distribution Primary diagnosis, *N* = 70.

Tab. 2: Results of regression analysis, t1.

	Overall psychological stress			Depressive symptoms		
	B	*SE(B)*	ß	*B*	*SE(B)*	ß
constant	1.801	0.34	-	3.733	0.50	-
Mindful eating	-.401	0.004	- .01*	-.501	0.006	- .02**
Intuitive eating	.278	0.157	- .251	.150	0.224	.209
R^2	.076			.166**		

Notes. Coding Mindful eating behavior: 1 (never) – 6 (almost always); Intuitive eating behavior 1 (strongly agree) – 5 (strongly disagree); Psychological/depressive stress [AV]: 0 (does not apply) – 4 (extremely applicable) N = 70.
* *p* <.05, ** *p* <.01, *** *p* <.001

Tab. 3: Results of the t-test for paired samples, t1 / t2.

	t1		t2		
	M	*SD*	*M*	*SD*	*p*
Mindful eating	91.42	19.23	104.45	18.11	.000***
Intuitive eating	3.03	0.59	3.25	0.64	.002**
Psychische Gesamtbelastung	1.61	0.51	1.34	0.76	.321
Depressive Symptomatik	2.48	0.81	1.62	0.99	.014*

Notes. N = 31 * *p* <.05, ** *p* <.01, *** *p* <.001

Fig. 3: Linear relationship between depressive symptoms and intuitive (top) and mindful eating (bottom), including Loess line.

Based on a newly developed, mindfulness-focused nutritional therapy consisting of four modules, each with a theoretical and a practical unit, patients at a psychiatric-psychosomatic specialist hospital complete a four-week therapy unit in a group therapy setting. Building on the theoretical content learned, patients receive therapeutic support in putting their knowledge into practice by preparing meals. In a pre-post measurement over three measurement points t1 – t3, changes in mindful and intuitive eating behavior (Mindfulness Eating Inventory; MEI / Intuitive Eating Scale; IES) and effects on overall psychological stress (ICD-10 Symptom Rating; ISR) as well as changes in eating patterns towards health-promoting eating behavior. [4][5][6]. The scientific survey has been running since 01/2024. The long-term establishment of a control group to record the effects of nutritional therapy is in the planning stage.

Results

Descriptive and inferential statistical correlations between the mindfulness-based nutritional therapy concept, eating behavior, and psychological stress were examined. The subjects in the intervention group showed a statistically significant increase in mindful eating behavior (Mt1 = 91.42 (19.23)); Mt2 = 104.45 (18.11), p = .000, d = .78) and intuitive eating behavior (Mt1 = 3.03 (0.59)); Mt2 = 3.25 (0.64), p = .002, d = .60) as well as a statistically significant decrease in depressive symptom severity (Mt1 = 2.48 (0.81)); Mt2 = 1.62 (0.99), p = .014, d = .88). An exploratory regression analysis showed a statistically significant influence of mindful eating on the decrease in (depressive) symptom severity at measurement time t1 under the given conditions (β = -.01, t = -2.30, p = .025; β = -.02, t = -3.13, p = .003). No predictive influence could be demonstrated for intuitive eating behavior in the first data analysis, although there was a clear linear correlation, especially with depressive stress. Mindful and intuitive eating behavior can explain 17% of the variance in depressive symptoms (R^2 = 0.17, F(2) = 6.66, p = .002). Across all three measurement points, there was a clear descriptive increase in intuitive and mindful eating behavior and a decrease in overall stress and depressive symptoms.

Discussion

The findings show that mindful eating habits have a significant impact on mental health. In addition, participants in multimodal nutritional therapy show an increase in mindful and intuitive eating behaviors, which are associated with mental health, especially with depressive symptoms. This allows the field of research to focus on further studies beyond biomedical factors and toward a psychological-psychotherapeutic perspective on nutrition. Future studies could expand to include disorder-specific factors and additional nutritional therapy aspects. Furthermore, the establishment of a control group is planned to explore possible causal relationships between nutritional therapy interventions and mental health in order to derive further implications for care-related treatment.

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Literature
[1] Deutsche Gesellschaft für Psychiatrie und Psychotherapie, Psychosomatik und Nervenheilkunde. (2019). *S3-Leitlinie Psychosoziale Therapien bei schweren psychischen Erkrankungen*. (2. Aufl.). Berlin: Springer. doi:10.1007/978-3-662-58284-8 **[2]** Kornacka, M., Czepczor-Bernat, K., Napieralski, P., & Brytek-Matera, A. (2021). Rumination, mood, and maladaptive eating behaviors in overweight and healthy populations. *Eating and weight disorders : EWD*, *26*(1), 273–285. doi:10.1007/s40519-020-00857-z_[3]Warren, J. M., Smith, N., & Ashwell, M. (2017). A structured literature review on the role of mindfulness, mindful eating and intuitive eating in changing eating behaviours: effectiveness and associated potential mechanisms. *Nutrition research reviews*, *30*(2), 272–283. https://doi.org/10.1017/S0954422417000154 **[4]** Ruzanska, U. A., & Warschburger, P. (2017). Psychometric evaluation of the German version of the Intuitive Eating Scale-2 in a community sample. *Appetite*, *117*, 126–134. doi.org/10.1016/j.appet.2017.06.018 **[5]** Peitz, D., Schulze, J., & Warschburger, P. (2021). Getting a deeper understanding of mindfulness in the context of eating behavior: Development and validation of the Mindful Eating Inventory. *Appetite*, *159*, 105039. doi:10.1016/j.appet.2020.105039. **[6]** Kleiser, C., Mensink, G., Kurth, B. M., Neuhauser, H., & Schenk, L. (2007). Ernährungsverhalten von Kindern und Jugendlichen mit Migrationshintergrund–KiGGS-Migrantenauswertung.

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