

# Intermittent Fasting During Systemic Therapy: Evidence for the Oncology Advanced Practitioner

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## Background

- Nearly 48% of patients with cancer actively seek health benefits from special diets to improve disease outcomes.<sup>1</sup>
- Intermittent fasting as adjunct to chemotherapy has increased in popularity among patients with cancer.
- Intermittent fasting encompasses a wide spectrum of dietary patterns involving episodes of calorie restriction or calorie reduction over a set period of time.
- Limited research is available examining the feasibility, safety, tolerability, and treatment effects of intermittent fasting during chemotherapy.

## Objective

- This purpose of this integrative review is to:**
  - Evaluate the evidence of fasting on patients with cancer undergoing systemic therapy
  - Identify limitations in the research to provide oncology advanced practitioners (AP) with evidence-based information to guide clinical decision making

## Methods

- A comprehensive literature search was conducted using three databases: Ovid MEDLINE®, Ovid Excerpta Medica Database (EMBASE®), and Cumulative Index to Nursing and Allied Health Literature (CINAHL®).
- The search strategy followed the Population, Intervention, Comparison, Outcome (PICO) framework.<sup>2</sup>
- The search terms utilized a combination of Medical Subject Heading (MeSH) terms and keywords for various spellings and/or terminology related to cancer, fasting, and chemotherapy.
- A systematic approach was used to identify and screen research studies following the Preferred Reporting Items for Systemic Reviews and Meta-Analyses (PRISMA) guidelines.<sup>3</sup>

## Results

Figure 1: Identification of Review Articles

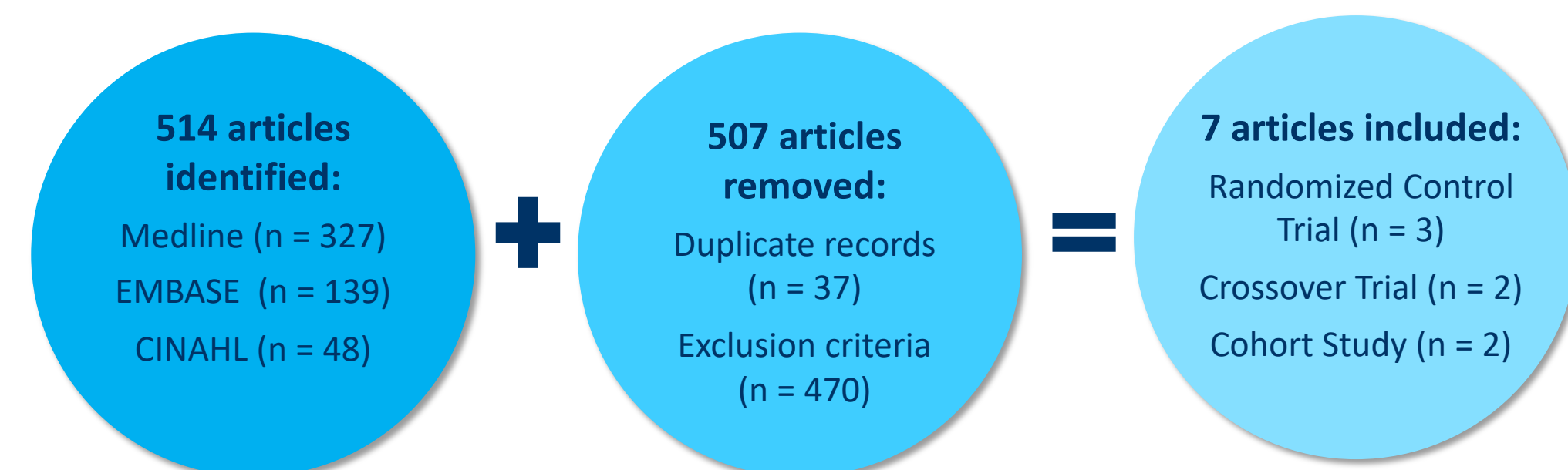


Table 1: Summary of Review Articles

Study	Study Design	Sample Size	Cancer Type	Fasting Protocol	Findings
Dorff et al. 2016 USA	Cohort Study, Prospective	N = 20 • 24 HR, n = 6 • 48 HR, n = 7 • 72 HR, n = 7	Urothelial NSCLC Ovarian Uterine Breast	STS 72 HR	STS, 72 HR: Fasting feasible, safe, less SE, increased treatment response
Bauersfeld et al. 2018 Germany	Randomized Crossover Trial	N = 34 • Group A, n = 18 • Group B, n = 16	Breast Ovarian	STF 60 HR	STF: Fasting feasible, safe, less SE, less dose reductions/cycle delays
de Groot et al. 2020 Netherlands	Randomized Control Trial	N = 129 • FMD, n = 65 • RD, n = 64	Breast	FMD 96 HR	FMD: Fasting feasible, increased treatment response - No difference in SE or dose reductions/cycle delays
Lugtenberg et al. 2020 Netherlands	Randomized Control Trial	N = 129 • FMD, n = 65 • RD, n = 64	Breast	FMD 96 HR	FMD: Fasting feasible, safe
Riedinger et al. 2020 USA	Randomized Control Trial	N = 20 • STF, n = 10 • RD, n = 10	Ovarian Uterine Cervical	STF 48 HR	STF: Fasting feasible, safe, less SE, less dose reductions/cycle delays - No difference in treatment response
Zorn et al. 2020 Germany	Control Crossover Trial	N = 16 • mSTF /RD, n = 7 • RD /mSTF, n = 9	Breast Ovarian Endometrial Cervical	mSTF 96 HR	mSTF: Fasting feasible, safe, less SE, less dose reductions/cycle delays
Tang et al. 2021 Taiwan	Cohort Study, Prospective	N= 12 • SCR, n = 6 • RD, n = 6	Lymphoma	SCR 48 HR	SCR: Fasting feasible, safe

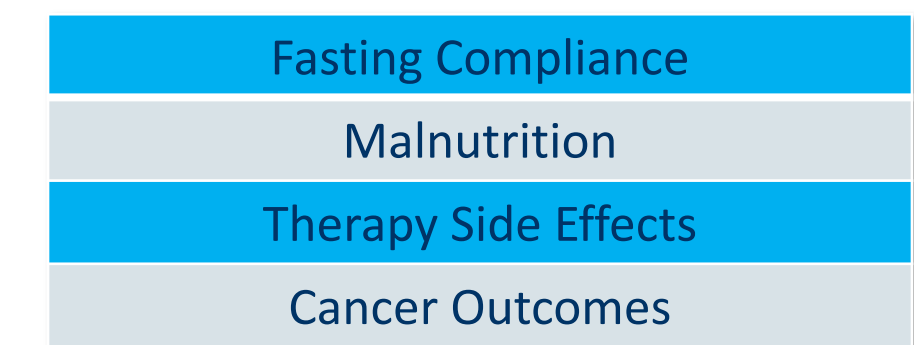
Note. STS = Short-Term Starvation; STF = Short-Term Fasting; FMD = Fasting Mimicking Diet; mSTF = modified Short-Term Fasting; SCR = Short-Term Calorie Restriction; RD = Regular Diet, SE = Side Effects

Table 2: Summary of Fasting Protocols

Intermittent Fasting	Intervention
Short-Term Starvation (STS)	Limited to no calories from liquids; no food
Short-Term Fasting (STF)	Limited to no calories from liquids; no food
Fasting-Mimicking Diet (FMD)	25-50% reduction in total daily calories
modified Short-Term Fasting (mSTF)	25-50% reduction in total daily calories
Short-Term Calorie Restriction (SCR)	Water only; no food, liquids, IV fluids

## Results

- The seven articles identified for final review examined four outcomes essential to understanding how fasting impacts patients with cancer and cancer treatment:



- Data suggests overall good compliance, no malnutrition, minimal side effects, and mixed results for cancer outcomes.
- Limitations of the seven studies included small sample size, bias toward gender, race, and cancer type, interventions involving only normal weight patients with body mass index (BMI) > 18 kg/m<sup>2</sup>, variation in fasting protocols, and short-term follow-up surveillance.

## Conclusion

- Intermittent fasting as adjunct to chemotherapy in normal weight patients with cancer has the potential to be a feasible, safe, and tolerable nutritional intervention but may not be effective for improving cancer outcomes.**
- These current findings are less generalizable to the greater oncology patient population given the limitations identified among the current available literature.
- There is not enough evidence to support intermittent fasting as a nutritional intervention to improve disease or treatment outcomes.**
- Large-scale randomized controlled trials are needed to validate the current findings and to determine what future role intermittent fasting may play in cancer management.

## Recommendations

- Oncology APs should ask patients about nutrition, as patients may make dietary changes without medical guidance given the growing popularity of special diets.**
- Oncology APs should use caution when considering the use of intermittent fasting in adjunct to chemotherapy given the limitations identified in this review and lack of generalizability of results.**

## References

- Zick, S. M., Snyder, D., & Abrams, D. I. (2018). Pros and Cons of Dietary Strategies Popular Among Cancer Patients. *Oncology (Williston Park)*, 32(11), 542-547.
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