The impact of evidence-based practice guidelines adherence on clinical outcomes in patients with cancer

A systematic review and meta-analysis

Nofisat Ismaila, MD, PhD(c)
Department of Health Research Methods, Evidence, and Impact, McMaster University, Hamilton, ON, Canada

THE ECOSYSTEM OF EVIDENCE

Lessons learned in the pandemic era and future challenges

10ᵗʰ International Conference for EBHC Teachers and Developers
10ᵗʰ Conference of the International Society for EBHC
Taormina, 25ᵗʰ – 28ᵗʰ October 2023

#EBHC2023

GIMBE EVIDENCE FOR HEALTH

Background

Clinical practice guidelines (CPGs) are developed to standardize care by providing physicians and decision makers with evidence-based recommendations which are based on the systematic review of available evidence.

There are currently about 3000 CPGs available worldwide in different languages according to the Guidelines International Network Library.

About 30% of these CPGs are oncology guidelines.

THE ECOSYSTEM OF EVIDENCE | Lessons learned in the pandemic era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023   #EBHC2023

GIMBE
EVIDENCE FOR HEALTH

CPG Adherence Definition

- Conformity in fulfilling or following official, recognized, or institutional requirements, recommendations, protocols, pathways, or other standards (U.S. National Library of Science).

- Adherence to CPGs is expected to result in better patient outcomes.

Aims

To analyze the effects of guideline adherence versus non-adherence to CPGs (i.e., usual care without guideline adherence) on clinical outcomes in patients with cancer.

THE ECOSYSTEM OF EVIDENCE | Lessons learned in the pandemic era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023   #EBHC2023

GIMBE
EVIDENCE FOR HEALTH

Methods

Databases searched:

MEDLINE

EMBASE

PsychINFO

CINAHL

Cochrane Controlled Trials Register

Search Period:

through April 2022

- **Population:** adult cancer patients being managed in healthcare centers
- **Intervention:** adherence to CPGs
- **Comparison:** usual care without use of adherence to CPGs
- **Outcome:** patient related outcomes (OS, DFS, incidence-based mortality, and quality of life)
- **Study Designs:** systematic reviews, RCTs, and observational studies (cohort, before and after and case control)

Abbreviations: OS, Overall Survival; DFS, Disease Free Survival; RCTs, Randomized Control Trial

Results

Title and abstract screening- 5039

Full text screening – 104

Included studies – 60

Identification

Records identified through database searching
N = 5807

Additional records identified through other sources
N = 0

Screening

Records after duplicates removed
N = 5039

Records screened
N = 5038

Records excluded
N = 4934

Eligibility

Full-text articles assessed for eligibility
N = 104

Full-text articles excluded, with reasons
N = 44
Does not include a study population of interest (N = 8)
Does not include intervention of interest (N = 14)
Does not include outcomes of interest (N = 9)
Is not an included study design (reviews, case ... (N = 13)

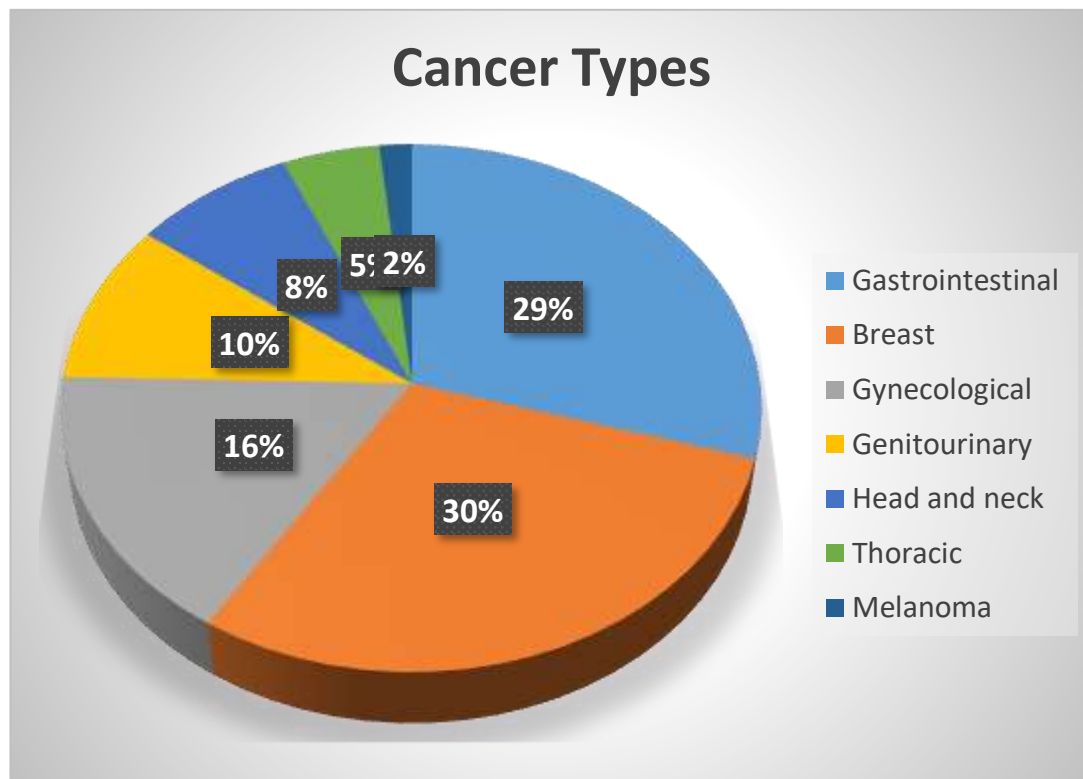**Included**

Studies included in qualitative synthesis
N = 31

Studies included in quantitative synthesis (meta-analysis)
N = 29

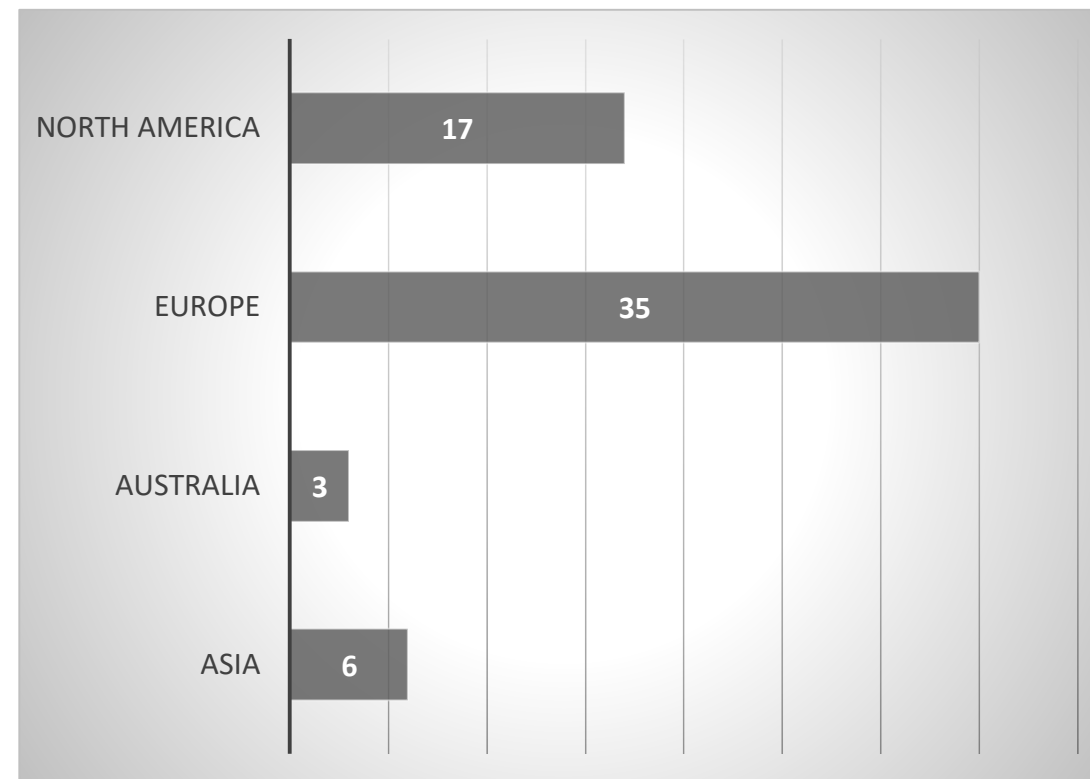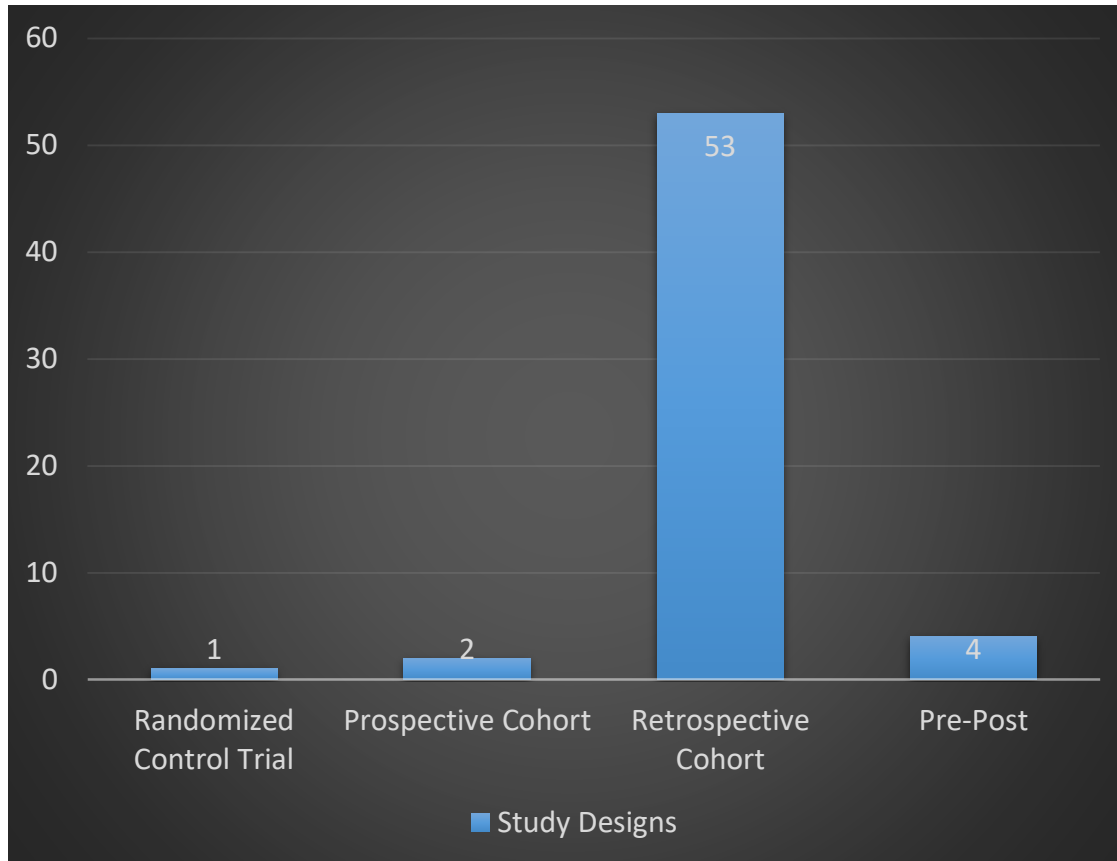THE ECOSYSTEM OF EVIDENCE | Lessons learned in the pandemic era and future challenges

10ᵗʰ International Conference for EBHC Teachers and Developers
10ᵗʰ Conference of the International Society for EBHC
Taormina, 25ᵗʰ - 28ᵗʰ October 2023   #EBHC2023

GIMBE
EVIDENCE FOR HEALTH

Results

Study Population

Cancer Types

- Gastrointestinal — 29%
- Breast — 30%
- Gynecological — 16%
- Genitourinary — 10%
- Head and neck — 8%
- Thoracic — 5%
- Melanoma — 2%

Study Location

Region	Count
NORTH AMERICA	17
EUROPE	35
AUSTRALIA	3
ASIA	6

THE ECOSYSTEM OF EVIDENCE | Lessons learned in the pandemic era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023   #EBHC2023

GIMBE EVIDENCE FOR HEALTH

Results

Study Designs

Guidelines Used

Guidelines	Number
National Comprehensive Cancer Network	17
German National Consensus S3 Guideline	11
European Association of Urology	5
Comprehensive Cancer Center Middle Netherlands	3
Barcelona Clinic Liver Cancer Guideline	3
European Society for Medical Oncology	2
Australian Cancer Council guidelines	2
American College of Surgeons	2
American Thyroid Association Guidelines	2
Japan Society of Gynecologic Oncology	2
National Dutch Guideline	2
Standardized treatment protocol	2
Others	11
Not specified	5

THE ECOSYSTEM OF EVIDENCE | Lessons learned in the pandemic era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023   #EBHC2023

GIMBE
EVIDENCE FOR HEALTH

Results

Adherence Rate by Disease Site

Bar chart showing adherence rates by disease site. Y-axis: Adherence rates. X-axis: Disease sites.

- BREAST: 85%
- GASTROINTESTINAL: 68%
- GENITOURINARY: 64.50%
- GYNAECOLOGICAL: 60%
- HEAD AND NECK: 67%
- THORACIC: 65%
- MELANONA: 77.50%

Results

- Adherence to CPG may have little or no effect on OS in all disease sites (hazard ratio [HR]=0.96 (95% confidence interval [CI]: 0.84-1.10); p=0.57, I^2:98%; very low CoE).

- DFS and RFS analysis also showed similar findings (HR=0.84 (95% CI: 0.36-0.1.97); p=0.69, I^2:91%; low CoE and HR=0.91 (95% CI: 0.60-1.39); p=0.67, I^2:97%; very low CoE) respectively.

- Analysis by disease site showed similar results except in thoracic cancer (HR=0.79 (95% CI: 0.64-0.97); p<0.02, I^2:80%; low CoE).

THE ECOSYSTEM OF EVIDENCE | Lessons learned in the pandemic era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023   #EBHC2023

GIMBE EVIDENCE FOR HEALTH
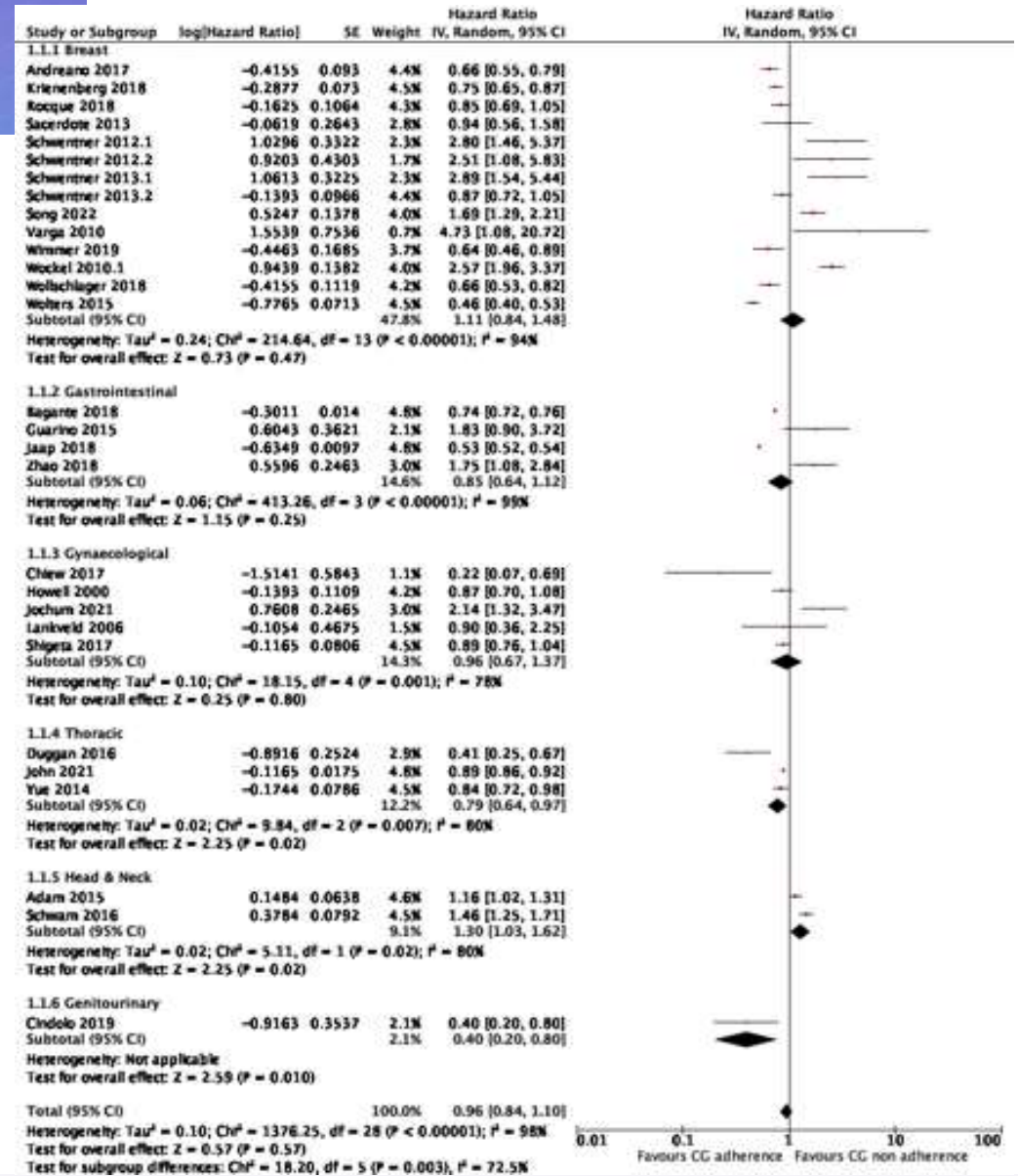
Results

- Studies in breast cancer with an average of 5 years follow up showed adherence to guidelines may improve OS (HR=0.70 (95% CI: 0.64-0.77); p<0.001, I^2:0%; low CoE).

- None of the studies evaluated QOL.
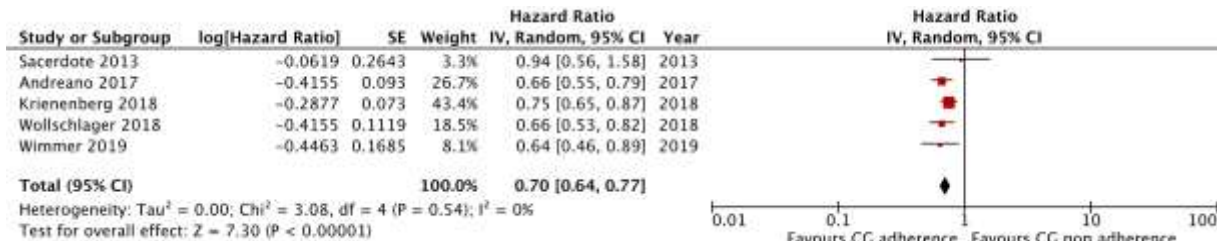
Summary of findings:

Adherence to CPG compared to non-adherence to CPG for patients with cancer

Patient or population: patients with cancer
Setting:
Intervention: adherence to CPG
Comparison: non-adherence to CPG

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with non-adherence to CPG	Risk with adherence to CPG				
OS - All disease sites follow-up: range 1.3 years to 15 years	432 per 1,000[a]	419 per 1,000 (378 to 464)	HR 0.96 (0.84 to 1.10)	111132 (29 observational studies)[b]	⊕◯◯◯ Very low[c]	Adherence to CPG may have little to no effect on OS in all disease sites but the evidence is very uncertain.
OS- Breast subgroup follow-up: median 5 years	267 per 1,000	195 per 1,000 (180 to 212)	HR 0.70 (0.64 to 0.77)	17964 (5 observational studies)	⊕⊕◯◯ Low	The evidence suggests adherence to CPG may improve OS in breast cancer disease subgroup.

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **HR:** hazard Ratio

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

Limitations

Available studies that were pooled were all retrospective registry study design which are inherently subject to reporting and selection bias and issues with incomplete data.

None of the studies gathered any quality-of-life data on these patients or included any qualitative reporting on patients or clinicians' views on guideline adherence.

Meta-analysis showed very high I^2 ranging from 78-99%. Despite further subgroup analysis the I^2 was still high in most instances.

Issues affecting guideline adherence could also play a role in the effect sizes reported in the studies.

THE ECOSYSTEM OF EVIDENCE | Lessons learned in the pandemic era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023   #EBHC2023

GIMBE
EVIDENCE FOR HEALTH

Conclusions

Clinician's adherence to CPG recommendations have little or no effects on outcomes.

However it may have some beneficial effect on outcomes in some disease areas that include breast and thoracic cancer.

Adherence to guideline recommendations should be implemented and encouraged.

THE ECOSYSTEM OF EVIDENCE | Lessons learned in the pandemic era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023   #EBHC2023

GIMBE
EVIDENCE FOR HEALTH