How to present at journal club

Vagish Hemmige

4/12/22

Background

- What is a journal club?
- What are the goals of journal club?

Background

- Review new papers in the context of preceding literature
- Educate the fellows (and faculty)
- Develop critical appraisal skills towards medical literature
- Develop presentation skills
- Fulfill ACGME requirements

Lee AY, *et al*. *Ophthalmology*. 2006 Mar;113(3):497-500.

Background

- What does the literature suggest is the benefit to trainees of participating in journal club?

TABLE 1

Interventional Studies on the Use of Journal Club with Outcome Measures

Author(s) (Year)	Design	Intervention/ Participants	Control	Outcomes
Linzer (1987)[39]	Cohort	JC with internal medicine residents (n = 42 led by faculty and n = 43 led by chief resident)		Both groups improved in methodology of literature knowledge and reading habits improved
Linzer (1988)[40]	Randomized trial	JC for internal medicine interns (n = 22)	Standard conference on ambulatory care (n = 20)	Reading habits, clinical epidemiology and biostatistics knowledge improved, but critical appraisal skills did not improve
Markert (1989)[43]	Cross-sectional study	Internal medicine residents (n = 24). Use of stimulus questions (checklist) for assessment of articles		Research design and concepts were taught better and self assessment rated as "helpful"
Kitchens (1989)[30]	Controlled, crossover educational trial	Internal medicine residents given clinical epidemiology curriculum	Ambulatory curriculum	Clinical epidemiology knowledge improved
Seelig (1991)[53]	Uncontrolled "before and after" (pre- and post-test) study	Internal medicine residents (n = 14) given short seminar in JC on adult educational principles		Critical appraisal knowledge improved on post-test, reading time and self assessment improved
Langkamp (1992)[33]	Cohort	JC and didactic sessions for pediatric residents (n = 14)	No JC (n = 13)	Clinical epidemiology and biostatistics knowledge did not improve
Moberg-Wolff and Kosasih (1995)[47]	Cross-sectional survey	Survey of JC for physical medicine and rehabilitation chief residents (n = 67)		"Fairly high satisfaction" and perceived success of JC
Burstein (1996)[7]	Unmasked interventional study	JC with structured checklist for emergency medicine residents (n = 10)	Before and after survey	Structured checklist improved satisfaction and educational value
Sandifer (1996)[51]	Publication of "letters to the editor" used as proxy outcome measure	Consultants and trainees of Public Health Medicine (n = 16)		Six letters to the editor published
Spillane and Crowe (1998)[56]	Cross-sectional survey	Registrars and consultant surgeons (n = 28) responded		Self assessed improvement in critical appraisal skills

TABLE 1 (*continued*)

Author(s) (Year)	Design	Intervention/ Participants	Control	Outcomes
Bazarian (1999)[3]	Prospective, trial	Structured JC for emergency medicine residents (n = 16)	Traditional unstructured JC (n = 16)	Critical appraisal skills did not improve
Khan (1999)[29]	Before and after study	JC for OB-GYN residents (n = 8)	n = 8 baseline	Clinical epidemiology and biostatistics, and reading habits improved
Kellum (2000)[28]	Prospective, interventional study with pre- and post-test	Critical appraisal exercises in critical care fellows (n = 6)		Improved self assessment and ability in critical appraisal
Letterie and Morgenstern (2000)[36]		Curriculum in epidemiology, biostatistics, and experimental design for JC for OB-GYN residents		Increased satisfaction and familiarity with concepts
Cramer and Mahoney (2001)[9]	Before and after study	JC for Family Medicine residents (n = 35)	n = 35 baseline	Improved knowledge of evidence based medicine
MacRae (2004)[41]	Randomized controlled trial	Internet based JC for Canadian Association Of General Surgeons (n = 44)	Articles only (n = 37)	Improved critical appraisal skills

JC = journal club; OB-GYN = obstetrics and gynecology.

Lee AY, *et al*. *Surv Ophthalmol.* 2005 Nov-Dec;50(6):542-8.

First steps…

- So what is the first step?

First steps

- Selection criteria for papers
  - Interesting!
  - Landmark
  - Important clinical question
  - Unique methodology
  - Suggests change in practice

Discussing the background section

- A short review of the existing literature, *tailored to the audience,* and setting the table for a study

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  - RIGHT: “Few studies have examined the use of posaconazole in the treatment of histoplasmosis…”

Discussing the background section

- A short review of the existing literature, *tailored to the audience,* and setting the table for a study
  - WRONG: “Histoplasmosis is a dimorphic fungus endemic to the Mississippi River valley…”
  - RIGHT: “Few studies have examined the use of posaconazole in the treatment of histoplasmosis…”
  - WRONG: “CR3, LFA-1, and p150,95, in binding of *Histoplasma capsulatum…”*

Discussing the background section

- Why do this study?
  - Gaps in the prior literature
  - Contradictory studies

Discussing the methods section

- Make sure you understand the methodology clearly
  - If you don't, find someone who does and have them explain it to you
- In many ways, this is the most important part of the journal club

Important notes

- Should email out paper ahead of time
  - Makes the entire enterprise more productive
- Feedback from faculty re: presentation is key
- Learn the statistical methodology
- Journal club should NOT be something thrown together the night before!

Moderate Alcohol Use Is Not Associated With Fibrosis Progression in Human Immunodeficiency Virus/Hepatitis C Virus–Coinfected Women: A Prospective Cohort Study

Erin M. Kelly,[1] Jennifer L. Dodge,[2] Peter Bacchetti,[3] Monika Sarkar,[4] Audrey L. French,[5] Phyllis C. Tien,[4,6] Marshall J. Glesby,[7] Elizabeth T. Golub,[8] Michael Augenbraun,[9] Michael Plankey,[10] and Marion G. Peters[4]

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Journal Club

Vagish Hemmige

Background

- Hepatitis C infection and alcohol consumption are two of the most common causes of liver disease and cirrhosis in the United States.
- Both HCV infection and EtOH consumption are more prevalent in HIV-infected populations
  - 50% of HIV-infected patients consume alcohol, with misuse rates approximately twice that of the population baseline
  - 20-25% of HIV-infected patients are HCV-infected

Clin Gastroenterol Hepatol. 2011 Jun;9(6):524-530
J Stud Alcohol. 2002;63:179-186.

Background

- Accordingly, the burden of liver disease in HIV-infected populations is high.
  - Liver disease accounted for 14-18% of non-infectious deaths in the HOPS study
- HIV affects the natural history of untreated hepatitis C
  - Less likely to clear viremia
  - Higher HCV viral load
  - More rapid progression to cirrhosis

J Acquir Immune Defic Syndr. 2006 Sep; 43(1):27-34.
Clin Gastroenterol Hepatol. 2010 Dec; 8(12): 1002–1012.

Background

- Similarly, heavy alcohol use accelerates the development of liver disease in both HCV mono-infected as well as HIV/HCV coinfected populations, and is more prevalent in both populations
- Although complete abstinence in active HCV infection is frequently recommended, observational studies have conflicted as to the impact of moderate alcohol intake on hepatitis C outcomes

Lancet. 1997 Mar 22; 349(9055):825-32.
Clin Infect Dis. 2005 Jul 1; 41 Suppl 1():S105-9.

Background

- One French cross-sectional study suggested a linear dose-response curve between EtOH consumption and liver fibrosis on liver biopsy
- Other studies, using a variety of methodologies and outcomes, have not been so conclusive as to their results

Aliment Pharmacol Ther. 2003 Apr;17(8):1031-7.
PLoS One **2012**; 7:e46810.

- *What type of study is this?*
- *Funder and role?*

Study

- Retrospective analysis of data collected prospectively in the Women's Interagency Cohort Study, a longitudinal multicenter observational cohort study
- Subjects were recruited in the mid-1990s and early 2000s and underwent comprehensive evaluations every six months
- For the purposes of this study, 686 coinfected women were included
- Alcohol use was classified as follows:
  - Light: 1–3 drinks/week
  - Moderate: 4–7 drinks/week, and
  - Heavy: >7 drinks/week

Epidemiology **1998**; 9:117–25.

- *Was there a clearly stated hypothesis?*
- *Clearly stated primary outcome?*
- *Is the sample size adequate?*

Study

$$FIB4 = \frac{Age[years] \times AST[U/L]}{Platelet[10^9/L] \times \sqrt{ALT[U/L]}}$$

- The outcome was the FIB4 score, which is a non-invasive way to assess liver fibrosis used in many studies.
- Sensitivity and specificity for detecting liver diseases depend on specific cutoffs selected, but the ROC AUC has been estimated to be in the 0.85-0.9 range.

Hepatology. 2007 Jul;46(1):32-6.

Statistical methodology

- Random effects linear regression
  - Random effects models are used when multiple observations are conducted on the same individual
  - This accounts for the fact that separate observations on the same patient are likely to be similar to each other

Statistical methodology

- Assumptions
  - All the assumptions of linear regression ***PLUS***
  - Normal distribution of random intercept, slope
  - Assumption that these random effects aren't correlated with the other covariates included in the model

Statistical methodology

- The random effects methodology can be used for linear, logistic, as well as Poisson regression
- Of note, there are other ways of adopting linear, logistic, and Poisson regression to adjust for repeated observations, the most important of which are the *fixed effects* approach, and the *generalized estimating equations* approach

Results

Variable	No.	All (N = 684)[a]	Abstinent (n = 316)	1–3 (n = 184)	4–7 (n = 49)	8–14 (n = 46)	>14 (n = 89)	*P* Value (Group)
Mean age, y (SD)		39.7 (6)	39.6 (6)	40.3 (7)	40.4 (7)	38.8 (5)	39.4 (5)	**.049**
Race/ethnicity	680							.60
White[b]		17.4% (118)	17.5% (55)	18.1% (33)	6.1% (3)	23.9% (11)	17.2% (15)	
Hispanic		19.3% (131)	21.0% (66)	18.1% (33)	22.5% (11)	13.0% (6)	17.2% (15)	
African American[b]		62.7% (426)	60.5% (190)	63.2% (115)	71.4% (35)	63.0% (29)	65.5% (57)	
Other		0.7% (5)	1.0% (3)	0.6% (1)	0	0	0	
HCV genotype 1	554	87.5% (485)	85.7% (217)	89.1% (140)	89.5% (34)	90.9% (30)	88.7% (63)	.85
Mean HCV viral load, log IU/mL (SD)	686	6.2 (1)	6.2 (1)	6.1 (1)	6.1 (1	6.4 (1)	6.4 (1)	**<.001**
Median CD4 (IQR)	685	351 (198–548)	337 (176–548)	326 (197–506)	352 (235–555)	337 (176–548)	402 (249–633)	.2
Median HIV viral load × 10^3 (IQR), IU/mL	681	4.3 (3.4–4.9)	4.3 (3.2–4.9)	4.2 (3.5–4.8)	4.1 (3.6–4.9)	4.4 (3.8–5.1)	4.3 (3.7–5.1)	.71
ART use	682	28.6% (195)	36.1% (113)	30.0% (57)	16.3% (8)	13.3% (6)	11.2% (10)	**<.001**
Mean BMI (SD)	673	26.1 (6)	27.0 (6)	25.8 (6)	24.9 (5)	26.6 (5)	23.9 (4)	**.001**
Hypertension	686	22.7% (156)	21.2% (67)	22.8% (42)	24.5% (12)	26.1% (12)	25.8% (23)	.86
Diabetes	684	17.3% (118)	16.1% (51)	20.3% (37)	20.4% (10)	19.5% (9)	12.4% (11)	.5
Cigarette smoking	686	77.7% (533)	69.0% (316)	83.1% (153)	81.6% (40)	93.5% (43)	86.5% (77)	**<.001**
IDU	686	21.9% (150)	16.5% (52)	19.0% (35)	32.7% (16)	28.3% (13)	37.1% (33)	**<.001**
Non-IDU	686	44.9% (308)	21.5% (68)	54.8% (99)	69.4% (34)	65.2% (30)	84.3% (75)	**<.001**
Marijuana use	686	27.0% (185)	11.4% (36)	35.3% (65)	34.7% (17)	41.3% (19)	51.7% (46)	**<.001**
Median entry alcohol use (IQR)	684	0.5 (0–4.5)	0	1 (0.5–2)	6 (4.5–7)	10.5 (9–12)	33 (21–70)	**<.001**
Median FIB-4 score (IQR)	681	1.42 (1.0–2.1)	1.45 (1.05–2.08)	1.32 (0.89–2.02)	1.55 (1.01–1.36)	1.53 (1.09–2.16)	1.51 (0.99–2.26)	.5
Significant fibrosis (FIB-4 score >3.25)	681	10.6% (72)	9.9% (31)	10.9% (20)	8.1% (4)	10.9% (5)	13.6% (12)	.73

Data are presented as percentage (No.) unless otherwise indicated. Bold denotes $P < .05$.

Abbreviations: ART, antiretroviral therapy; BMI, body mass index; FIB-4, Fibrosis-4 Index for Liver Fibrosis; HCV, hepatitis C virus; HIV, human immunodeficiency virus; IDU, injection drug use; IQR, interquartile range; SD, standard deviation.

[a]Missing entry data in 2 patients.

[b]Compared to African-American.

Results

Table 2. Change in Alcohol Consumption in Women's Interagency HIV Study Follow-up by Entry Alcohol Use Groups

	Average No. (%) of Drinks/Week During Women's Interagency HIV Study				
Average No. of Drinks/Week at Baseline	0	1–3	4–7	8–14	> 14
0 (n = 316)	**159 (50.32)**	**125 (39.56)**	**14 (4.43)**	**9 (2.85)**	**9 (2.85)**
1–3 (n = 184)	*0 (0)*	**145 (78.8)**	**24 (13.04)**	**12 (6.52)**	**3 (1.63)**
4–7 (n = 49)	*0 (0)*	*25 (51.02)*	**17 (34.69)**	**5 (10.2)**	**2 (4.08)**
8–14 (n = 46)	*0 (0)*	*16 (34.78)*	*12 (26.09)*	**12 (26.09)**	**6 (13.04)**
>14 (n = 89)	*0 (0)*	*8 (8.99)*	*12 (13.48)*	*26 (29.21)*	**43 (48.31)**
Total (N = 684)	159	319	79	64	63

This includes averaged data from Women's Interagency HIV Study entry and follow-up so that only women who were abstinent from entry and every follow-up visit have average alcohol use of 0 (n = 159). Women with average use >0 but <1 were included in the 1–3 drinks/week category

Gray text denotes average alcohol use in follow-up greater than at entry, italic text denotes average alcohol use in follow-up less than at entry, and bolded black text denotes no change in average follow-up use as compared to entry use.

Results

Table 4. Factors Associated With Fibrosis Progression[a] in Women's Interagency HIV Study Follow-up

Variable	Estimated Average Rate of FIB-4 Progression, Units per Year (95% CI)	*P* Value
Within age range		
<40 y	−0.05 (−.18 to .07)	.41
40–45 inclusive y	0.09 (−.03 to .20)	.13
>45–50 y	0.07 (−.04 to .18)	.20
>50–55 y	0.13 (.02–.23)	**.02**
>55 y	0.17 (.05–.29)	**.007**
Race/ethnicity[b]		
Hispanic	0.25 (.12–.38)	**<.001**
White	0.17 (.03–.31)	**.02**
Log_{10} HIV viral load (per 1 log increase)	0.05 (.02–.08)	**.001**
Light alcohol use (1–3 drinks/week)[c]	0.004 (−.11 to .12)	.95
Moderate alcohol use (4–7 drinks/week)[c]	0.006 (−.18 to .19)	.95
Heavy alcohol use (>7 drinks/week)[c]	0.16 (−.03 to .34)	.09
8–14 drinks/week	0.04 (−.19 to .28)	.72
Heavier alcohol use (>14 drinks/week)[c]	0.25 (.01–.49)	**.04**

P values <.05 are denoted in bold.

Abbreviations: CI, confidence interval; FIB-4, Fibrosis-4 Index for Liver Fibrosis; HIV, human immunodeficiency virus.

[a]As measured by increase in FIB-4 units per year.

[b]Compared to African-American.

[c]Compared to abstinent.

Evaluating the study

Screening Questions

1. Did the study address a clearly focused issue? ❒ Yes ❒ Can't tell ❒ No

HINT: A question can be 'focused' In terms of

- The population studied
- The risk factors studied
- The outcomes considered
- Is it clear whether the study tried to detect a beneficial or harmful effect?

Evaluating the study

2. Was the cohort recruited in an acceptable way? ☐ Yes ☐ Can't tell ☐ No

HINT: Look for selection bias which might compromise the generalisibility of the findings:

- Was the cohort representative of a defined population?
- Was there something special about the cohort?
- Was everybody included who should have been included?

Evaluating the study

3. Was the exposure accurately measured to minimise bias? ❑ Yes ❑ Can't tell ❑ No

HINT: Look for measurement or classification bias:

- Did they use subjective or objective measurements?
- Do the measurements truly reflect what you want them to (have they been validated)?
- Were all the subjects classified into exposure groups using the same procedure

Evaluating the study

4. Was the outcome accurately measured to minimise bias? ❑ Yes ❑ Can't tell ❑ No

HINT: Look for measurement or classification bias:

- Did they use subjective or objective measurements?
- Do the measures truly reflect what you want them to (have they been validated)?
- Has a reliable system been established for detecting all the cases (for measuring disease occurrence)?
- Were the measurement methods similar in the different groups?
- Were the subjects and/or the outcome assessor blinded to exposure (does this matter)?

Evaluating the study

5. (a) Have the authors identified all important confounding factors? ❒ Yes ❒ Can't tell ❒ No

   List the ones you think might be important, that the author missed.

   (b) Have they taken account of the confounding factors in the design and/or analysis? ❒ Yes ❒ Can't tell ❒ No

   List:

HINT: Look for restriction in design, and techniques e.g. modelling, stratified-, regression-, or sensitivity analysis to correct, control or adjust for confounding factors

Evaluating the study

6. (a) Was the follow up of subjects complete enough? ❒ Yes ❒ Can't tell ❒ No

(b) Was the follow up of subjects long enough? ❒ Yes ❒ Can't tell ❒ No

HINT: Consider

- The good or bad effects should have had long enough to reveal themselves
- The persons that are lost to follow-up may have different outcomes than those available for assessment
- In an open or dynamic cohort, was there anything special about the outcome of the people leaving, or the exposure of the people entering the cohort?

Evaluating the study

9. Do you believe the results? ❒ Yes ❒ Can't tell ❒ No

HINT: Consider

- Big effect is hard to ignore!
- Can it be due to bias, chance or confounding?
- Are the design and methods of this study sufficiently flawed to make the results unreliable?
- Bradford Hills criteria (e.g. time sequence, dose-response gradient, biological plausibility, consistency)

Evaluating the study

11. Do the results of this study fit with other available evidence?

❒ Yes ❒ Can't tell ❒ No

Evaluating the study

12. What are the implications of this study for practice?

HINT: Consider

- One observational study rarely provides sufficiently robust evidence to recommend changes to clinical practice or within health policy decision making
- For certain questions observational studies provide the only evidence
- Recommendations from observational studies are always stronger when supported by other evidence

- *Other strengths and limitations?*

Strengths

- Prospectively collected data
- Longitudinal data to avoid the biases of cross-sectional studies
- Long term follow up
- Diverse patient population
- No funder conflicts

Limitations

- Lack of data on alcohol use prior to study enrollment
- Lack of data on hard outcomes (cirrhosis, death); reliance on FIB-4 which is not as accurate as liver biopsy or TEG
- Applicability to current era of DAA?
- Low rates of ARV use and use of older ARV regimens

Conclusions

- Mild to moderate alcohol consumption may not accelerate liver disease progression in HIV/HCV coinfected women
- Further data from the modern eras of HIV/HCV therapy are needed to validate these findings.