

**Table S1.** Studies included in the present meta-analysis, including quantitative and qualitative assessment.

Study	Method	Source	Disease	Virus	Family	Ref.
Aarnio <i>et al.</i> , 2012	ISH	Gastric tissue	IBD	HHV-5	<i>Herpesviridae</i>	[121]
Abdel-Moneim <i>et al.</i> , 2016	PCR	Colon/rectum tissue	CRC	Bocavirus	Respiratory	[122]
Abdirad <i>et al.</i> , 2007	PCR	Gastric tissue	GC	HHV-4	<i>Hepadnaviridae</i>	[123]
Adams <i>et al.</i> , 2016	Record	—	IBD	HHV-3	<i>Herpesviridae</i>	[124]
Afzal <i>et al.</i> , 2000	PCR	Gastric tissue	IBD	Measles	Epithelial	[125]
Afzal <i>et al.</i> , 1998	Serology	Serum	IBD	Measles	Epithelial	[126]
Aghakhani <i>et al.</i> , 2014	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[127]
Ahmad <i>et al.</i> , 2019	PCR	Stool	IBD	Norovirus, Rotavirus, ADV	Intestinal	[128]
Akintola-Ogunremi <i>et al.</i> , 2005	ISH	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[129]
Alacam	PCR	Gastric tissue	GC	HHV-5	<i>Herpesviridae</i>	[130]
Alain <i>et al.</i> , 2005	Serology	Serum	IBD	HHV-5	<i>Herpesviridae</i>	[131]
Alipov <i>et al.</i> , 2005	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[132]
Audeau <i>et al.</i> , 2002	ISH	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[133]
Axelrad <i>et al.</i> , 2018	PCR	Stool	IBD	Norovirus, Rotavirus, ADV, Sapovirus	Intestinal	[134]
Axelrad <i>et al.</i> , 2019	Record	—	IBD	Norovirus, Rotavirus, ADV	Intestinal	[135]
Balzola <i>et al.</i> , 1998	Serology	Serum	IBD	Measles	Epithelial	[136]
Baran <i>et al.</i> , 2018	Serology	Serum	IBD	HHV-4, HHV-5	<i>Herpesviridae</i>	[137]
Bellaguarda <i>et al.</i> , 2015	Serology	Serum	IBD	JCV	<i>Polyomaviridae</i>	[138]
Bender <i>et al.</i> , 2009	PCR	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[139]
Bernabe-Dones <i>et al.</i> , 2016	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[140]
Bernstein <i>et al.</i> , 2007	Serology	Serum	IBD	Measles, Mumps	Epithelial	[141]
Bertalot <i>et al.</i> , 2001	ISH	Gastric tissue	IBD	HHV-4	<i>Herpesviridae</i>	[142]
Biancone <i>et al.</i> , 2001	Serology	Serum	IBD	HBV, HCV	<i>Hepadnaviridae</i> , <i>Flaviviridae</i>	[143]
Bodaghi <i>et al.</i> , 2005	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[144]
Boltin <i>et al.</i> , 2010	PCR	Gastric tissue	IBD	JCV	<i>Polyomaviridae</i>	[93]
Brichacek <i>et al.</i> , 1980	Serology	Serum	CRC	HHV-5, HHV-1, HHV-3	<i>Herpesviridae</i>	[145]
Burnett-Hartman <i>et al.</i> , 2011	Serology	Record	CRC	HPV	<i>Papillomaviridae</i>	[146]
Burnett-Hartman <i>et al.</i> , 2012	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[147]
Burnett-Hartman <i>et al.</i> , 2013	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[148]
Butt <i>et al.</i> , 2016	Serology	Serum	CRC	JCV, PyV6	<i>Polyomaviridae</i>	[149]

Campello <i>et al.</i> , 2010	PCR	Colon/rectum tissue	CRC	SV40, BKV	<i>Polyomaviridae</i>	[150]
Campello <i>et al.</i> , 2011	PCR	Colon/rectum tissue	CRC	MCPV	<i>Herpesviridae</i>	[151]
Cardenas-Mondragon <i>et al.</i> , 2015	Serology	Serum	GC	HHV-4	<i>Herpesviridae</i>	[152]
Carrascal <i>et al.</i> , 2003	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[153]
Casini <i>et al.</i> , 2005	ISH	Colon/rectum tissue	CRC	JCV, BKV	<i>Polyomaviridae</i>	[154]
Chan <i>et al.</i> , 2016	Serology	Serum	IBD	HBV	<i>Hepadnaviridae</i>	[155]
Chen <i>et al.</i> , 2016a	PCR	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[156]
Chen <i>et al.</i> , 2016b	PCR	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[157]
Chen <i>et al.</i> , 2017	Record	—	IBD	HBV, HCV	<i>Hepadnaviridae</i> , <i>Flaviviridae</i>	[158]
Chevaux <i>et al.</i> , 2010	Serology	Serum	IBD	HBV, HCV	<i>Hepadnaviridae</i> , <i>Flaviviridae</i>	[159]
Cho <i>et al.</i> , 2001	ISH	Colon/rectum tissue	CRC	HHV-4	<i>Herpesviridae</i>	[160]
Coelho <i>et al.</i> , 2013	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[161]
Cohen <i>et al.</i> , 2018	ISH	Colon/rectum tissue	IBD	HHV-5	<i>Herpesviridae</i>	[162]
Dalla Libera <i>et al.</i> , 2020	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[163]
Damin <i>et al.</i> , 2007	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[100]
De Francisco <i>et al.</i> , 2018	Serology	Serum	IBD	HHV-4	<i>Herpesviridae</i>	[164]
de Lima <i>et al.</i> , 2012	PCR	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[165]
de Saussure <i>et al.</i> , 2004	Serology	Serum	IBD	HHV-5	<i>Herpesviridae</i>	[166]
de Souza <i>et al.</i> , 2018	ISH	Gastric tissue	GC	HHV-4, HPV	<i>Herpesviridae</i>	[167]
de Villiers <i>et al.</i> , 2002	ISH	Colon/rectum tissue	CRC	TTV	<i>Anelloviridae</i>	[168]
de Villiers <i>et al.</i> , 2007	PCR	Colon/rectum tissue	CRC	TTV	<i>Anelloviridae</i>	[169]
Del Moral-Hernandez <i>et al.</i> , 2019	PCR	Gastric tissue	GC	HHV-4, HHV-5	<i>Herpesviridae</i>	[170]
Deschoolmeester <i>et al.</i> , 2010	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[171]
Dimitroulia <i>et al.</i> , 2006	ISH	Gastric tissue	IBD	HHV-5	<i>Herpesviridae</i>	[172]
Dimitroulia <i>et al.</i> , 2013	PCR	Gastric tissue	IBD	HHV-4	<i>Herpesviridae</i>	[173]
Dimberg <i>et al.</i> , 2013	PCR	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[174]
do Carmo <i>et al.</i> , 2014	PCR	Stools	IBD	HHV-5	<i>Herpesviridae</i>	[175]
El-Matary <i>et al.</i> ,	PCR	Colon/rectum	IBD	HHV-5	<i>Herpesviridae</i>	[176]

2018		tissue				
Enam <i>et al.</i> , 2002	PCR/ISH	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[177]
Esmailzadeh <i>et al.</i> , 2020	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[178]
Eyre-Brook <i>et al.</i> , 1986	ISH	Colon/rectum tissue	IBD	HHV-5	<i>Herpesviridae</i>	[179]
Fahal <i>et al.</i> , 1995	Serology	Serum	GC	HIV, HBV	<i>Retroviridae</i> , <i>Hepadnaviridae</i>	[180]
Farmer <i>et al.</i> , 1973	Serology	Serum	IBD	Mumps, ADV, Reovirus, HHV-5, HHV-1, HHV-3	Epithelial, respiratory, intestinal, <i>Herpesviridae</i>	[181]
Fernandes <i>et al.</i> , 2019	Virome	Stool	IBD	<i>Caudovirales</i>	Phages	[50]
Fiorina <i>et al.</i> , 2014	PCR	Colon/rectum tissue	CRC	HHV-4	<i>Herpesviridae</i>	[182]
Flores <i>et al.</i> , 2014	PCR	Serum	IBD	BKV	<i>Polyomaviridae</i>	[183]
Gauss <i>et al.</i> , 2015	Record	—	IBD	HHV-5	<i>Herpesviridae</i>	[184]
Gazzaz <i>et al.</i> , 2016	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[185]
Genitsch <i>et al.</i> , 2015	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[186]
Giuliani <i>et al.</i> , 2008	PCR	Colon/rectum tissue	CRC	SV40, JCV, BKV	<i>Polyomaviridae</i>	[187]
Goel <i>et al.</i> , 2006	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[188]
Gong <i>et al.</i> , 2019	Record	—	IBD	HHV-4	<i>Herpesviridae</i>	[189]
Gonzalez <i>et al.</i> , 2015	Serology	Serum	CRC	HCV	<i>Flaviviridae</i>	[190]
Gordon <i>et al.</i> , 2016	Record	—	IBD	HHV-4	<i>Herpesviridae</i>	[191]
Gornick <i>et al.</i> , 2010	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[192]
Green <i>et al.</i> , 1981	ISH	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[193]
Greenberg <i>et al.</i> , 1978	Serology	Serum	IBD	Rotavirus	Intestinal	[194]
Grinstein <i>et al.</i> , 2002	ISH	Colon/rectum tissue	CRC	HHV-4	<i>Herpesviridae</i>	[195]
Gupta <i>et al.</i> , 2020	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[196]
Haga <i>et al.</i> , 1996	PCR	Gastric tissue	IBD	Measles, Mumps, Rubella	Epithelial	[197]
Haghi-Navand <i>et al.</i> , 2019	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[198]
Hamada <i>et al.</i> , 2014	Record	—	CRC	HIV	<i>Retroviridae</i>	[199]
Hampras <i>et al.</i> , 2014	Serology	Serum	CRC	JCV	<i>Polyomaviridae</i>	[200]
Hannigan <i>et al.</i> , 2018	Virome	Stool	CRC	<i>Caudovirales</i>	Phages	[52]
Harkins <i>et al.</i> , 2002	ISH	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[201]
Harsh <i>et al.</i> , 2017	Record	—	IBD	HBV, HCV, HIV	<i>Hepadnaviridae</i> , <i>Flaviviridae</i> , <i>Retroviridae</i>	[202]

Hart <i>et al.</i> , 1982	ISH	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[203]
Hayashi <i>et al.</i> , 1996	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[204]
He <i>et al.</i> , 2015	Serology	Serum	IBD	HBV	<i>Hepadnaviridae</i>	[205]
Hernandez-Losa <i>et al.</i> , 2003	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[206]
Herrera-Goepfert <i>et al.</i> , 2005	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[207]
Hirata <i>et al.</i> , 2007	Record	—	CRC	HTLV-I	<i>Retroviridae</i>	[208]
Hori <i>et al.</i> , 2005	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[209]
Hradsky <i>et al.</i> , 2015	PCR	Serum	IBD	HHV-4	<i>Herpesviridae</i>	[210]
Hsieh <i>et al.</i> , 1998	PCR	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[211]
Huang <i>et al.</i> , 1978	ISH	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[212]
Iizuka <i>et al.</i> , 2001	Serology	Serum	IBD	Mumps	Epithelial	[213]
Ito <i>et al.</i> , 1992	Serology	Serum	CRC	IMV	Epithelial	[214]
Jarzynski <i>et al.</i> , 2017	PCR	Colon/rectum tissue	CRC	HPV, BKV	<i>Papillomaviridae</i> , <i>Polyomaviridae</i>	[215]
Jung <i>et al.</i> , 2008	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[216]
Jung <i>et al.</i> , 2019	Serology	Serum	CRC	HBV, HCV	<i>Hepadnaviridae</i> , <i>Flaviviridae</i>	[217]
Kambham <i>et al.</i> , 2004	ISH	Colon/rectum tissue	IBD	HHV-5	<i>Herpesviridae</i>	[218]
Kamiza <i>et al.</i> , 2016	Record	—	CRC	HBV, HCV	<i>Hepadnaviridae</i> , <i>Flaviviridae</i>	[219]
Kane <i>et al.</i> , 1971	Serology	Serum	IBD	HHV-4	<i>Herpesviridae</i>	[220]
Karbalaie-Niya <i>et al.</i> , 2018	PCR	Colon/rectum tissue	CRC	MCPV	<i>Polyomaviridae</i>	[221]
Karim <i>et al.</i> , 2003	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[222]
Karpinski <i>et al.</i> , 2011	PCR	Colon/rectum tissue	CRC	HHV-4, JCV, KSHV, ADV	<i>Herpesviridae</i> , <i>Polyomaviridae</i> , respiratory	[223]
Kattoor <i>et al.</i> , 2002	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[224]
Kawashima <i>et al.</i> , 2000	PCR	Serum	IBD	Measles	Epithelial	[225]
Kayamba <i>et al.</i> , 2016	Serology	Serum	GC	HHV-4	<i>Herpesviridae</i>	[226]
Keller <i>et al.</i> , 2014	Record	—	CRC	HIV	<i>Retroviridae</i>	[227]
Khabaz <i>et al.</i> , 2016b	PCR	Colon/rectum tissue	CRC	SV40	<i>Polyomaviridae</i>	[228]
Kiewe <i>et al.</i> , 2009	Serology	Serum	CRC	HHV-5	<i>Herpesviridae</i>	[229]
Kim <i>et al.</i> , 2010	ISH	Colon/rectum tissue	IBD	HHV-5	<i>Herpesviridae</i>	[230]
Kim <i>et al.</i> , 2014	Serology	Serum	IBD	HBV	<i>Hepadnaviridae</i>	[231]
Kirgan <i>et al.</i> , 1990	ISH	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[99]
Kishore <i>et al.</i> , 2004	Serology	Serum	IBD	HHV-5	<i>Herpesviridae</i>	[232]
Knoell <i>et al.</i> , 2005	Serology	Serum	IBD	HBV, HCV	<i>Hepadnaviridae</i>	[233]

					<i>Flaviviridae</i>	
Knosel <i>et al.</i> , 2004	PCR	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[234]
Knosel <i>et al.</i> , 2009	PCR	Colon/rectum tissue	IBD	HHV-4, HHV-5, HHV-1, HHV-6	<i>Herpesviridae</i>	[235]
Kocoglu <i>et al.</i> , 2016	Serology	Serum	CRC	HBV, HCV	<i>Hepadnaviridae</i> , <i>Flaviviridae</i>	[236]
Kojima <i>et al.</i> , 2006	Record	—	IBD	HHV-4	<i>Herpesviridae</i>	[237]
Kolho <i>et al.</i> , 2012	PCR	Stool	IBD	Norovirus	Intestinal	[238]
Kong <i>et al.</i> , 2007	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[239]
Ksiaa <i>et al.</i> , 2010	PCR	Gastric tissue	GC	JCV	<i>Polyomaviridae</i>	[240]
Ksiaa <i>et al.</i> , 2015	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[241]
Laghi <i>et al.</i> , 1999	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[242]
Lavy <i>et al.</i> , 2001	Serology	Serum	IBD	Measles	Epithelial	[243]
Lee <i>et al.</i> , 2001	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[244]
Leveque <i>et al.</i> , 2010	PCR	Colon/rectum tissue	IBD	HHV-5	<i>Herpesviridae</i>	[245]
Li <i>et al.</i> , 2007	ISH	Colon/rectum tissue	CRC	Parvo B19	Epithelial	[246]
Li <i>et al.</i> , 2019	PCR	Gastric tissue	IBD	HHV-4	<i>Herpesviridae</i>	[75]
Lin <i>et al.</i> , 2008	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[247]
Liu <i>et al.</i> , 2011	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[248]
Lu <i>et al.</i> , 2018	Serology	Serum	CRC	HBV	<i>Hepadnaviridae</i>	[249]
Lundstig <i>et al.</i> , 2007	Serology	Serum	CRC	JCV, BKV	<i>Polyomaviridae</i>	[250]
Lv <i>et al.</i> , 2020	Serology	Gastric tissue	IBD	HHV-5	<i>Herpesviridae</i>	[251]
MacKey <i>et al.</i> , 1979	ISH	Colon/rectum tissue	CRC	ADV	Respiratory	[252]
Maconi <i>et al.</i> , 2005	ISH	Colon/rectum tissue	IBD	HHV-5	<i>Herpesviridae</i>	[253]
Malekpour <i>et al.</i> , 2018	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[254]
Mariguela <i>et al.</i> , 2008	PCR	Colon/rectum tissue	CRC/IBD	HHV-4, HHV-5	<i>Herpesviridae</i>	[255]
Mehrabani-Khasraghi <i>et al.</i> , 2016	PCR	Colon/rectum tissue	CRC	HHV-4, HHV-5, HHV-1	<i>Herpesviridae</i>	[256]
Militello <i>et al.</i> , 2009	PCR	Colon/rectum tissue	CRC	HHV-4, HHV-5, HPV	Multiple	[257]
Montgomery <i>et al.</i> , 1999	Record	—	IBD	Measles, Mumps, HHV-3	Epithelial	[258]
Morewaya <i>et al.</i> , 2004	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[259]
Mou <i>et al.</i> , 2012	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[260]
Nakatsu <i>et al.</i> , 2018	Virome	Stool	CRC	Inovirus, Tunalikevirus,	Epithelial	[51]

				Bunyavirus		
Newcomb <i>et al.</i> , 2004	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[261]
Niv <i>et al.</i> , 2010	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[262]
Norman <i>et al.</i> , 2015	Virome	Stool	IBD	<i>Caudovirales</i>	Phages	[38]
Nosho <i>et al.</i> , 2009	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[263]
Nosrati <i>et al.</i> , 2015	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[264]
Oda <i>et al.</i> , 2003	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[265]
Perez <i>et al.</i> , 2005	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[266]
Perez-Brocal <i>et al.</i> , 2013	Virome	Stool	IBD	<i>Caudovirales</i>	Phages	[48]
Perez-Brocal <i>et al.</i> , 2015	Virome	Stool	IBD	<i>Caudovirales</i>	Phages	[49]
Pironi <i>et al.</i> , 2009	PCR	Colon/rectum tissue	IBD	Parvo B19	Epithelial	[267]
Roblin <i>et al.</i> , 2011	ISH	Gastric tissue	IBD	HHV-5	<i>Herpesviridae</i>	[268]
Roblin <i>et al.</i> , 2012	Serology	Serum	IBD	HHV-5	<i>Herpesviridae</i>	[269]
Roche <i>et al.</i> , 1981	ISH	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[270]
Rollison <i>et al.</i> , 2009	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[271]
Ruger <i>et al.</i> , 1985	ISH	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[272]
Ryan <i>et al.</i> , 2012	PCR	Gastric tissue	IBD	HHV-4	<i>Herpesviridae</i>	[73]
Salepci <i>et al.</i> , 2009	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[273]
Samaka <i>et al.</i> , 2013	ISH	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[274]
Sarvari <i>et al.</i> , 2018	PCR	Colon/rectum tissue	CRC	HHV-4, JCV	<i>Herpesviridae</i> , <i>Polyomaviridae</i>	[275]
Schildgen <i>et al.</i> , 2013	PCR	Colon/rectum tissue	CRC	Bocavirus	Respiratory	[276]
Shah <i>et al.</i> , 1992	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[277]
Shibata <i>et al.</i> , 1993	PCR	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[278]
Sinagra <i>et al.</i> , 2014	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[279]
Su <i>et al.</i> , 2020	Record	—	CRC	HBV	<i>Hepadnaviridae</i>	[280]
Sura <i>et al.</i> , 2010	PCR	Gastric tissue	IBD	HHV6	<i>Herpesviridae</i>	[281]
Tafvizi <i>et al.</i> , 2014	PCR	Colon/rectum tissue	CRC	HHV-5	<i>Herpesviridae</i>	[282]
Tafvizi <i>et al.</i> , 2015	PCR	Colon/rectum tissue	CRC	HHV-4	<i>Herpesviridae</i>	[283]
Taherian <i>et al.</i> , 2014	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[284]
Theodoropoulos <i>et al.</i> , 2005	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[285]
Tolentino <i>et al.</i> ,	Serology	Serum	IBD	HBV	<i>Hepadnaviridae</i>	[286]

2008

Toumi <i>et al.</i> , 2017	PCR	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[287]
Trimeche <i>et al.</i> , 2009	PCR	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[288]
Truong <i>et al.</i> , 2009	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[289]
Tsai <i>et al.</i> , 2015	Record	—	IBD	HHV-3	<i>Herpesviridae</i>	[290]
Ungaro <i>et al.</i> , 2019	Virome	Record	IBD	Multiple herpesviruses	<i>Herpesviridae</i>	[54]
Vanoli <i>et al.</i> , 2017	ISH	Gastric tissue	IBD	HHV-4	<i>Herpesviridae</i>	[291]
Vega <i>et al.</i> , 1999	ISH	Gastric tissue	IBD	HHV-5	<i>Herpesviridae</i>	[292]
Vilkin <i>et al.</i> , 2012	ISH	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[293]
Wagner <i>et al.</i> , 2013	Virome	Gastric tissue	IBD	<i>Caudovirales</i>	Phages	[53]
Wakefield <i>et al.</i> , 1992	PCR	Gastric tissue	IBD	HHV-4, HHV-5, HHV-6	<i>Herpesviridae</i>	[294]
Weinreb <i>et al.</i> , 2006	ISH	Colon/rectum tissue	CRC	JCV	<i>Polyomaviridae</i>	[295]
Wong <i>et al.</i> , 2003	ISH	Colon/rectum tissue	CRC	HHV-4	<i>Herpesviridae</i>	[296]
Yanai <i>et al.</i> , 1997	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[297]
Yanai <i>et al.</i> , 1999	ISH	Colon/rectum tissue	IBD	HHV-4	<i>Herpesviridae</i>	[298]
Yavuzer <i>et al.</i> , 2011	PCR	Colon/rectum tissue	CRC	HPV	<i>Papillomaviridae</i>	[299]
Yi <i>et al.</i> , 2013	PCR/Serology	Serum	IBD	HHV-5	<i>Herpesviridae</i>	[300]
Yuen <i>et al.</i> , 1994	ISH	Colon/rectum tissue	CRC	HHV-4	<i>Herpesviridae</i>	[301]
Yunos <i>et al.</i> , 2006	ISH	Gastric tissue	GC	HHV-4	<i>Herpesviridae</i>	[302]
Zagorowicz <i>et al.</i> , 2016	ISH	Colon/rectum tissue	IBD	HHV-5	<i>Herpesviridae</i>	[303]
Zapatka <i>et. al.</i> , 2020	Virome	Gastric and Colon/rectum tissues	GC	HHV-4 HBV	<i>Herpesviridae</i> <i>Hepadnaviridae</i>	[55]

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**Table S2.** NOS scores of the studies included in the present meta-analysis, including quantitative and qualitative assessment.

Author	Representative ness	Control group	Documentation	Outcome	Absence of co- infections	Score
Aarnio <i>et al.</i> , 2012	No	No	Yes	Yes	Yes	Moderate
Abdel-Moneim <i>et al.</i> , 2016	Yes	No	Yes	Yes	Yes	Moderate
Abdirad <i>et al.</i> , 2007	Yes	No	Yes	Yes	No	Moderate
Adams <i>et al.</i> , 2016	Yes	No	Yes	Yes	Yes	Moderate
Afzal <i>et al.</i> , 2000	No	No	Yes	Yes	Yes	Moderate
Afzal <i>et al.</i> , 1998	No	Yes	Yes	Yes	Yes	Moderate
Aghakhani <i>et al.</i> , 2014	Yes	No	Yes	Yes	Yes	Moderate
Ahmad <i>et al.</i> , 2019	Yes	No	Yes	Yes	Yes	Moderate
Akintola-Ogunremi <i>et al.</i> , 2005	Yes	Yes	No	Yes	Yes	Moderate
Alacam <i>et al.</i> , 2021	Yes	No	Yes	Yes	Yes	Moderate
Alain <i>et al.</i> , 2005	Yes	No	Yes	Yes	Yes	Moderate
Alipov <i>et al.</i> , 2005	Yes	No	Yes	Yes	Yes	Moderate
Audeau <i>et al.</i> , 2002	No	No	Yes	Yes	Yes	Moderate
Axelrad <i>et al.</i> , 2018	Yes	Yes	Yes	Yes	Yes	High
Axelrad <i>et al.</i> , 2019	Yes	Yes	Yes	Yes	Yes	High
Balzola <i>et al.</i> , 1998	Yes	Yes	Yes	Yes	Yes	High
Baran <i>et al.</i> , 2018	No	No	Yes	Yes	Yes	Moderate
Bellaguarda <i>et al.</i> , 2015	Yes	No	Yes	Yes	Yes	Moderate
Bender <i>et al.</i> , 2009	Yes	No	Yes	Yes	Yes	Moderate
Bernabe-Dones <i>et al.</i> , 2016	Yes	Yes	Yes	Yes	Yes	High
Bernstein <i>et al.</i> , 2007	Yes	Yes	Yes	Yes	Yes	High
Bertalot <i>et al.</i> , 2001	No	No	Yes	Yes	No	Low
Biancone <i>et al.</i> , 2001	Yes	Yes	Yes	Yes	Yes	High
Bodaghi <i>et al.</i> , 2005	Yes	Yes	Yes	Yes	Yes	High
Boltin <i>et al.</i> , 2010	No	Yes	Yes	Yes	Yes	Moderate
Brichacek <i>et al.</i> , 1980	No	Yes	Yes	Yes	Yes	Moderate
Burnett-Hartman <i>et al.</i> , 2011	Yes	No	Yes	Yes	Yes	Moderate
Burnett-Hartman <i>et al.</i> , 2012	Yes	Yes	No	Yes	Yes	Moderate
Burnett-Hartman <i>et al.</i> , 2013	Yes	Yes	Yes	Yes	Yes	High
Butt <i>et al.</i> , 2016	Yes	Yes	Yes	Yes	Yes	High
Campello <i>et al.</i> , 2010	Yes	Yes	Yes	Yes	Yes	High
Campello <i>et al.</i> , 2011	Yes	Yes	Yes	Yes	Yes	High
Cardenas-Mondragon <i>et al.</i> , 2015b	Yes	Yes	Yes	Yes	Yes	High
Carrascal <i>et al.</i> , 2003	Yes	No	Yes	Yes	Yes	Moderate
Casini <i>et al.</i> , 2005	No	Yes	No	Yes	Yes	Moderate
Chan <i>et al.</i> , 2016	Yes	No	Yes	Yes	Yes	Moderate
Chen <i>et al.</i> , 2016	Yes	No	No	Yes	Yes	Moderate
Chen <i>et al.</i> , 2017	Yes	No	Yes	Yes	No	Moderate
Chevaux <i>et al.</i> , 2010	Yes	No	Yes	Yes	Yes	Moderate
Cho <i>et al.</i> , 2001	Yes	No	Yes	Yes	Yes	Moderate
Coelho <i>et al.</i> , 2013	Yes	Yes	Yes	Yes	Yes	High
Cohen <i>et al.</i> , 2018b	Yes	No	Yes	Yes	Yes	Moderate
Dalla Libera <i>et al.</i> , 2020	Yes	Yes	Yes	Yes	No	Moderate
Damin <i>et al.</i> , 2007	Yes	No	Yes	Yes	Yes	Moderate
De Francisco <i>et al.</i> , 2018	Yes	No	Yes	Yes	Yes	Moderate
de Lima <i>et al.</i> , 2012b	Yes	No	Yes	Yes	No	Moderate
de Saussure <i>et al.</i> , 2004	Yes	No	Yes	Yes	Yes	Moderate
de Souza <i>et al.</i> , 2018	Yes	No	Yes	Yes	Yes	Moderate
de Villiers <i>et al.</i> , 2002	No	No	Yes	Yes	Yes	Moderate
de Villiers <i>et al.</i> , 2007	Yes	Yes	Yes	Yes	Yes	High



Del Moral-Hernandez <i>et al.</i> , 2019	No	No	Yes	Yes	Yes	Moderate
Deschoolmeester <i>et al.</i> , 2010	Yes	No	Yes	Yes	Yes	Moderate
Dimitroulia <i>et al.</i> , 2006	Yes	Yes	No	Yes	Yes	Moderate
Dimitroulia <i>et al.</i> , 2013	Yes	Yes	Yes	Yes	No	Moderate
Dinberg <i>et al.</i> , 2013	Yes	No	Yes	Yes	Yes	Moderate
do Carmo <i>et al.</i> , 2014	Yes	No	Yes	Yes	Yes	Moderate
El-Matary <i>et al.</i> , 2018	Yes	No	Yes	Yes	Yes	Moderate
Enam <i>et al.</i> , 2002	No	No	No	Yes	Yes	Low
Esmailzadeh <i>et al.</i> , 2020	Yes	Yes	Yes	Yes	Yes	High
Eyre-Brook <i>et al.</i> , 1986	No	No	Yes	Yes	Yes	Moderate
Fahal <i>et al.</i> , 1995	Yes	Yes	Yes	Yes	No	Moderate
Farmers <i>et al.</i> , 1973	Yes	Yes	Yes	Yes	Yes	High
Fernandes <i>et al.</i> , 2019	No	Yes	Yes	Yes	Yes	Moderate
Fiorina <i>et al.</i> , 2014	Yes	Yes	Yes	Yes	Yes	High
Flores <i>et al.</i> , 2014	Yes	Yes	Yes	Yes	Yes	High
Gauss <i>et al.</i> , 2015	Yes	No	Yes	Yes	Yes	Moderate
Gazzaz <i>et al.</i> , 2016	Yes	No	Yes	Yes	Yes	Moderate
Genitsch <i>et al.</i> , 2015	Yes	No	Yes	Yes	Yes	Moderate
Giuliani <i>et al.</i> , 2008	Yes	No	Yes	Yes	Yes	Moderate
Goel <i>et al.</i> , 2006	Yes	No	No	Yes	Yes	Moderate
Gong <i>et al.</i> , 2019	Yes	No	Yes	Yes	Yes	Moderate
Gonzalez <i>et al.</i> , 2015	Yes	No	Yes	Yes	Yes	Moderate
Gordon <i>et al.</i> , 2016	Yes	No	Yes	Yes	Yes	Moderate
Gornick <i>et al.</i> , 2010	Yes	Yes	Yes	Yes	Yes	High
Green <i>et al.</i> , 1981	Yes	Yes	Yes	Yes	Yes	High
Greenberg <i>et al.</i> , 1978	Yes	Yes	Yes	Yes	Yes	High
Grinstein <i>et al.</i> , 2002	No	No	Yes	Yes	Yes	Moderate
Gupta <i>et al.</i> , 2020	Yes	No	Yes	Yes	Yes	Moderate
Haga <i>et al.</i> , 1996	No	Yes	Yes	Yes	Yes	Moderate
Haghi-Navand <i>et al.</i> , 2019	Yes	Yes	Yes	Yes	Yes	High
Hamada <i>et al.</i> , 2014	Yes	Yes	Yes	Yes	No	Moderate
Hampras <i>et al.</i> , 2014	Yes	Yes	No	No	Yes	Moderate
Hannigan <i>et al.</i> , 2018	Yes	Yes	No	Yes	Yes	Moderate
Harkins <i>et al.</i> , 2002	No	Yes	Yes	Yes	Yes	Moderate
Harsh <i>et al.</i> , 2017	Yes	Yes	Yes	Yes	No	Moderate
Hart <i>et al.</i> , 1982	No	No	Yes	Yes	Yes	Moderate
Hayashi <i>et al.</i> , 1996	Yes	No	Yes	Yes	Yes	Moderate
He <i>et al.</i> , 2015	Yes	Yes	Yes	Yes	Yes	High
Hernandez-Losa <i>et al.</i> , 2003	No	Yes	Yes	Yes	Yes	Moderate
Herrera-Goepfert <i>et al.</i> , 2005	Yes	No	Yes	Yes	Yes	Moderate
Hirata <i>et al.</i> , 2007	Yes	Yes	Yes	Yes	Yes	High
Hori <i>et al.</i> , 2005	Yes	Yes	No	Yes	Yes	Moderate
Hradsky <i>et al.</i> , 2015	Yes	No	Yes	Yes	Yes	Moderate
Hsieh <i>et al.</i> , 1998	Yes	No	Yes	Yes	Yes	Moderate
Huang <i>et al.</i> , 1978	No	Yes	Yes	Yes	Yes	Moderate
Iizuka <i>et al.</i> , 2001	No	Yes	Yes	Yes	Yes	Moderate
Ito <i>et al.</i> , 1992	Yes	Yes	Yes	Yes	Yes	High
Jarzynski <i>et al.</i> , 2017	Yes	No	Yes	Yes	Yes	Moderate
Jung <i>et al.</i> , 2008	Yes	No	Yes	Yes	Yes	Moderate
Jung <i>et al.</i> , 2019	Yes	No	Yes	Yes	Yes	Moderate
Kambham <i>et al.</i> , 2004	Yes	Yes	Yes	Yes	Yes	High
Kamiza <i>et al.</i> , 2016	Yes	Yes	Yes	Yes	Yes	High
Kane <i>et al.</i> , 1971	Yes	Yes	Yes	Yes	Yes	High
Karbalaie-Niya <i>et al.</i> , 2018	Yes	Yes	Yes	Yes	Yes	High
Karim <i>et al.</i> , 2003	Yes	No	Yes	Yes	Yes	Moderate
Karpinski <i>et al.</i> , 2011	Yes	No	Yes	Yes	Yes	Moderate

Kattoor <i>et al.</i> , 2002	Yes	No	Yes	Yes	Yes	Moderate
Kawashima <i>et al.</i> , 2000	No	Yes	Yes	Yes	Yes	Moderate
Kayamba <i>et al.</i> , 2016	Yes	Yes	Yes	Yes	Yes	High
Keller <i>et al.</i> , 2014	Yes	No	No	Yes	Yes	Moderate
Khabaz <i>et al.</i> , 2016	Yes	Yes	Yes	Yes	Yes	High
Kiewe <i>et al.</i> , 2009	Yes	Yes	Yes	Yes	Yes	High
Kim <i>et al.</i> , 2010	Yes	Yes	Yes	Yes	Yes	High
Kim <i>et al.</i> , 2014	Yes	Yes	Yes	Yes	Yes	High
Kirgan <i>et al.</i> , 1990	Yes	Yes	Yes	Yes	Yes	High
Kishore <i>et al.</i> , 2004	Yes	No	Yes	Yes	Yes	Moderate
Knoell <i>et al.</i> , 2005	Yes	Yes	Yes	Yes	Yes	High
Knosel <i>et al.</i> , 2004	Yes	No	Yes	Yes	Yes	Moderate
Knosel <i>et al.</i> , 2009	Yes	Yes	Yes	Yes	Yes	High
Kocoglu <i>et al.</i> , 2016	Yes	Yes	Yes	Yes	Yes	High
Kojima <i>et al.</i> , 2006	No	No	Yes	Yes	Yes	Moderate
Kolho <i>et al.</i> , 2012	Yes	Yes	No	Yes	Yes	Moderate
Kong <i>et al.</i> , 2007	No	No	Yes	Yes	Yes	Moderate
Ksiaa <i>et al.</i> , 2010	Yes	Yes	Yes	Yes	Yes	High
Ksiaa <i>et al.</i> , 2015	Yes	No	Yes	Yes	Yes	Moderate
Laghi <i>et al.</i> , 1999	No	No	No	Yes	Yes	Low
Lavy <i>et al.</i> , 2001	Yes	Yes	Yes	Yes	Yes	High
Lee <i>et al.</i> , 2001	No	Yes	Yes	Yes	Yes	Moderate
Leveque <i>et al.</i> , 2010	Yes	No	Yes	Yes	Yes	Moderate
Li <i>et al.</i> , 2007	Yes	Yes	Yes	Yes	Yes	High
Li <i>et al.</i> , 2019	Yes	Yes	Yes	Yes	Yes	High
Lin <i>et al.</i> , 2008	No	No	Yes	Yes	Yes	Moderate
Liu <i>et al.</i> , 2011	Yes	Yes	Yes	Yes	Yes	High
Lu <i>et al.</i> , 2018	Yes	No	Yes	Yes	Yes	Moderate
Lundstig <i>et al.</i> , 2007	No	No	Yes	Yes	Yes	Moderate
Lv <i>et al.</i> , 2020	Yes	Yes	Yes	Yes	Yes	High
MacKey <i>et al.</i> , 1979	No	No	Yes	Yes	Yes	Moderate
Maconi <i>et al.</i> , 2005	Yes	Yes	Yes	Yes	Yes	High
Malekpour <i>et al.</i> , 2018	Yes	No	Yes	Yes	Yes	Moderate
Mariguela <i>et al.</i> , 2008	No	No	Yes	Yes	Yes	Moderate
Mehrabani-Khasraghi <i>et al.</i> , 2016	No	Yes	Yes	Yes	Yes	Moderate
Militello <i>et al.</i> , 2009	Yes	Yes	Yes	Yes	Yes	High
Montgomery <i>et al.</i> , 1999	Yes	Yes	Yes	Yes	Yes	High
Morewaya <i>et al.</i> , 2004	Yes	No	Yes	Yes	Yes	Moderate
Mou <i>et al.</i> , 2012	Yes	Yes	No	No	Yes	Moderate
Nakatsu <i>et al.</i> , 2018	Yes	Yes	No	Yes	Yes	Moderate
Newcomb <i>et al.</i> , 2004	Yes	Yes	Yes	Yes	Yes	High
Niv <i>et al.</i> , 2010	No	No	No	No	Yes	Low
Norman <i>et al.</i> , 2015	Yes	Yes	Yes	Yes	Yes	High
Nosho <i>et al.</i> , 2009	Yes	No	Yes	Yes	Yes	Moderate
Nosrati <i>et al.</i> , 2015	Yes	Yes	No	No	Yes	Moderate
Oda <i>et al.</i> , 2003	Yes	No	Yes	Yes	Yes	Moderate
Perez <i>et al.</i> , 2005	Yes	Yes	Yes	Yes	Yes	High
Perez-Brocal <i>et al.</i> , 2013	No	Yes	No	No	Yes	Low
Perez-Brocal <i>et al.</i> , 2015	No	Yes	Yes	Yes	Yes	Moderate
Pironi <i>et al.</i> , 2009	No	No	Yes	Yes	No	Low
Roblin <i>et al.</i> , 2011	No	No	Yes	Yes	Yes	Moderate
Roblin <i>et al.</i> , 2012	Yes	No	Yes	Yes	Yes	Moderate
Roche <i>et al.</i> , 1981	No	No	No	Yes	Yes	Low
Rollison <i>et al.</i> , 2009	Yes	Yes	Yes	Yes	Yes	High
Ruger <i>et al.</i> , 1985	No	No	Yes	Yes	Yes	Moderate
Ryan <i>et al.</i> , 2012	No	Yes	Yes	Yes	Yes	Moderate

Salepci <i>et al.</i> , 2009	Yes	Yes	Yes	Yes	Yes	High
Samaka <i>et al.</i> , 2013	Yes	Yes	No	Yes	Yes	Moderate
Sarvari <i>et al.</i> , 2018	Yes	Yes	Yes	Yes	Yes	High
Schildgen <i>et al.</i> , 2013	No	No	Yes	Yes	Yes	Moderate
Shah <i>et al.</i> , 1992	Yes	No	Yes	Yes	Yes	Moderate
Shibata <i>et al.</i> , 1993	Yes	No	Yes	Yes	Yes	Moderate
Sinagra <i>et al.</i> , 2014	No	Yes	Yes	Yes	Yes	Moderate
Su <i>et al.</i> , 2020	Yes	Yes	Yes	Yes	Yes	High
Sura <i>et al.</i> , 2010	No	Yes	Yes	Yes	Yes	Moderate
Tafvizi <i>et al.</i> , 2014	Yes	Yes	Yes	Yes	Yes	High
Tafvizi <i>et al.</i> , 2015	Yes	Yes	Yes	Yes	Yes	High
Taherian <i>et al.</i> , 2014	Yes	Yes	Yes	Yes	Yes	High
Theodoropoulos <i>et al.</i> , 2005	Yes	Yes	Yes	Yes	Yes	High
Tolentino <i>et al.</i> , 2008	Yes	No	Yes	Yes	Yes	Moderate
Toumi <i>et al.</i> , 2017	No	No	Yes	Yes	Yes	Moderate
Trimeche <i>et al.</i> , 2009	Yes	No	Yes	Yes	Yes	Moderate
Truong <i>et al.</i> , 2009	Yes	No	Yes	Yes	Yes	Moderate
Tsai <i>et al.</i> , 2015	No	Yes	No	No	Yes	Low
Ungaro <i>et al.</i> , 2019	No	No	Yes	Yes	Yes	Moderate
Vanoli <i>et al.</i> , 2017	No	No	Yes	Yes	Yes	Moderate
Vega <i>et al.</i> , 1999	No	No	Yes	Yes	Yes	Moderate
Vilkin <i>et al.</i> , 2012	Yes	Yes	No	No	Yes	Moderate
Wagner <i>et al.</i> , 2013	No	No	No	Yes	Yes	Low
Wakefield <i>et al.</i> , 1992	Yes	Yes	Yes	Yes	Yes	High
Weinreb <i>et al.</i> , 2006	Yes	No	Yes	Yes	Yes	Moderate
Wong <i>et al.</i> , 2003	No	No	Yes	Yes	Yes	Moderate
Yanai <i>et al.</i> , 1997	No	No	Yes	Yes	Yes	Moderate
Yanai <i>et al.</i> , 1999	No	Yes	Yes	Yes	Yes	Moderate
Yavuzer <i>et al.</i> , 2011	Yes	Yes	No	Yes	Yes	Moderate
Yi <i>et al.</i> , 2013	Yes	Yes	Yes	Yes	Yes	High
Yuen <i>et al.</i> , 1994	No	No	Yes	Yes	Yes	Moderate
Yunos <i>et al.</i> , 2006	No	No	Yes	Yes	Yes	Moderate
Zagorowicz <i>et al.</i> , 2016	Yes	No	Yes	Yes	Yes	Moderate
Zapatka <i>et al.</i> , 2020	No	No	Yes	Yes	Yes	Moderate