

# Exploring Disease Representation in Movies

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The Academy Awards, also known as Oscars, are given annually by the *Academy of Motion Picture Arts and Sciences*. To celebrate the 90 years of this prestigious prize, and to highlight the relationship between cinematography and medicine, we analyzed the report of 554 films, which received nominations to “Oscar for Best Picture” since the first edition in 1929.<sup>1</sup>

To perform an accurate analysis, three authors independently evaluated the movies’ plots to searching references to illnesses or other aspects related to the medicine. The cases of disagreement have been discussed with a group of further three authors.

War wounds excluded, we found that among the nominated films, medicine references are reported in the plot of 105 (18.9%) (Table 1). Medicine references are present in twenty (21.9%) of ninety-one awarded films. The distribution of films referring to medicine is reported in Figure 1.

Our analysis shows that the most represented diseases are the psychiatric (21.9%) ones followed by neurological ones (13.3%), alcohol addiction (13.3%), and infectious diseases (13.3%).

Psychiatric diseases continue to have significant emotional and social impact but the methods of their treatments have always been a topic of ethical debate. It is interesting to note the references to passive-aggressive behavior, anxiety, delirium, and the use of questionably ethical treatment such as electro-shock therapy and lobotomy in “One Flew Over the Cuckoo’s Nest.”

Interesting are also the depictions of psychiatric diseases, such as schizophrenia, depression, post-traumatic stress, obsessive-compulsive, and bipolar disorders. Significant mental disabilities were brought to public attention by the movie “Rain Man,” in which the protagonist suffered from Savant syndrome.

A strong medical and social impact have also alcohol and drug addictions; the last are prevalent in films from the 2000s onwards.

Frequently reported illnesses are neurological diseases, which affect considerably the quality of life of the patients and their relatives. There have been references to ischemic stroke, senile dementia, cerebral hemorrhage, epidemic encephalitis, cerebral palsy, post-traumatic paraparesis, and amyotrophic lateral sclerosis as reported in biopics on Lou Gehrig and Stephen Hawking.

References to infectious diseases (scarlet, yellow, typhoid fevers, bubonic plague, measles, pneumonia) occur mostly in the movies of the 1930s and 1940s, when they were the most common causes of mortality. Moreover, five films set at the beginning of the twentieth century refer to tuberculosis, whereas HIV infection is reported mostly in movies set in the 1980s, when the disease was at its peak and highly stigmatized.

Surprisingly, two of the most widespread diseases of twentieth and twenty-first centuries are under-represented: we found nine references to oncological diseases, and only three references to heart diseases (respectively only 8.5% and 2.8% of the films referring to medicine).

We further report references to mutism and deaf-mutism, amnesia, insomnia, hemophilia, carbon monoxide poisoning, and two rare diseases such as the Proteus syndrome and the picnodysostosis, in “The Elephant Man” and in “Moulin Rouge,” respectively. Only few references can be found to metabolic diseases such as gout and diabetes mellitus.

From the 1990s onwards, some movies deal with important themes, such as euthanasia, clandestine abortion, medical malpractices, and relationship between environmental pollution and cancer.

Lastly, we wish to underline the plots of some films dealing with medicine and ethics in medicine; the biopic “The Story of Louis Pasteur” describes Pasteur’s discoveries; “The Citadel,” a film, in which the protagonist, a Scottish doctor, initially dedicated to cure miners affected by tuberculosis changes his mind after a meeting with a colleague and decides to solely serve the rich hypochondriacs.

Our analysis confirms that medicine and disease are an intrinsic part of humanity and, hence, serve as quasi-infinite source of inspiration for film-makers of past and present alike.

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Table 1 Films with Medical References Received Nomination for “Oscar for Best Picture”

Year of nomination	Winner	Title	Director	Cast	Medical references
1930	Not	The Patriot	Ernst Lubitsch	Emil Jannings	Paranoid personality
1932	Not	Arrowsmith	John Ford	Ronald Colman	Bubonic plague
1934	Not	Little Women	George Cuckor	Katharine Hepburn	Scarlet fever
1935	Not	The Barretts of Wimpole street	Sidney Franklin	Norma Shearer Fredric March	Undisclosed illness
1936	Not	Captain Blood	Michael Curtiz	Errol Flynn	Gout
1937	Not	The Story of Luis Pasteur	William Dieterle	Paul Muni	Asepsis, vaccinations
1938	Yes	The Life of Emile Zola	William Dieterle	Paul Muni	Carbon monoxide poisoning
1939	Not	The Citadel	King Vidor	Robert Donation	Medical ethics
1939	Not	Jezebel	William Wyler	Bette Davis	Yellow fever
1940	Yes	Gone with the Wind	Victor Fleming	Henry Fonda Clark Gable Vivien Leigh	Measles Pneumonia Typhoid fever
1940	Not	Dark Victory	Edmund Goulding	Bette Davis	Brain tumor
1942	Not	The Little Foxes	William Wyler	Bette Davis Herbert Marshall	Heart attack
1943	Not	The Pride of the Yankees	Sam Wood	Gary Cooper	Amyotrophic lateral sclerosis
1943	Not	Random Harvest	Mervyn LeRoy	Ronald Colman	Post-traumatic amnesia
1943	Not	The Magnificent Ambersons	Orson Welles	Joseph Cotten	Tuberculosis
1943	Not	Kings Row	Sam Wood	Ann Sheridan Robert Cummings Ronald Reagan	Ethics and medicine Unnecessary legs amputation
1944	Not	The Song of Bernadette	Henry King	Jennifer Jones	Tuberculosis
1946	Yes	The Lost Weekend	Bill Wilder	Ray Milland	Alcoholism Depression Amnesias
1946	Not	Spellbound	Alfred Hitchcock	Ingrid Bergman Gregory Peck	
1946	Not	Mildred Pierce	Michael Curtiz	Joan Crawford Jack Carson	Pneumonia
1946	Not	The Bells of St. Mary's	Leo McCarey	Bing Crosby Ingrid Bergman	Tuberculosis
1947	Not	The Razor's Edge	Edmund Goulding	Tyrone Power Gene Tierney	Alcohol addiction
1947	Not	The Yearling	Clarence Brown	Gregory Peck Jane Wyman	Unspecified neonatal deaths
1948	Not	Johnny Belinda	Jean Negulesco	Jane Wyman Lew Ayres	Deaf-mutism
1949	Not	The Snake Pit	Anatole Litvak	Olivia de Havilland	Schizophrenia
1952	Not	A Streetcar Named Desire	Elia Kazan	Vivien Leigh Marlon Brando	Alcohol addiction
1953	Yes	The Greatest Show on Earth	Cecil B. DeMille	Betty Hutton Cornel Wilde	Post-injury harm paralysis
1953	Not	Moulin Rouge	John Huston	José Ferrer	Picnodyostosis
1955	Not	The Country Girl	George Seaton	Grace Kelly Bing Crosby	Alcohol addiction
1955	Not	The Caine Mutiny	Edward Dmytryk	Humphrey Bogart José Ferrer	Panic attacks Paranoid personality
1958	Not	Peyton Place	Marco Robson	Lana Turner Hope Lange	Alcohol addiction
1959	Not	Cat on a Hot Tin Roof	Richard Brooks	Elizabeth Taylor Paul Newman	Alcoholism Cancer
1961	Not	Sons and Lovers	Jack Cardiff	Trevor Howard Dean Stockwell Wendy Hiller	Oedipus complex Pneumonia Cancer
1961	Not	Elmer Granty	Richard Brooks	Burt Lancaster	Alcoholism
1966	Not	Ship of Fools	Stanley Kramer	Vivien Leigh Simone Signoret	Opioid addiction
1966	Not	Doctor Zhivago	David Lean	Omar Sharif	Myocardial infarction
1967	Not	Who's Afraid of Virginia Woolf?	Mike Nichols	Elizabeth Taylor Richard Burton	Alcohol addiction
1970	Not	Z	Costa Gravas	Yves Montand Irene Papas	Post-traumatic cerebral hemorrhage
1971	Not	Love story	Arthur Hiller	Ali MacGraw	Leukemia
1972	Not	Nicholas and Alexandra	Franklin J Schaffner	Michael Jayston Janet Suzman	Hemophilia
1974	Not	Cries and Whispers	Ingmar Bergman	Harriet Andersson	Uterine cancer
1975	Not	The Conversation	Francis Ford Coppola	Gene Hackman	Obsessive-compulsive disorder
1975	Not	Lenny	Melvin Frank	Dustin Hoffman	Alcohol and drug addiction
1976	Not	Dog Day Afternoon	Sidney Lumet	Al Pacino	Diabetes mellitus
1976	Yes	One Flew Over the Cuckoo's Nest	Miloš Forman	Jack Nicholson	Passive-aggressive behavior Anxiety Delirium

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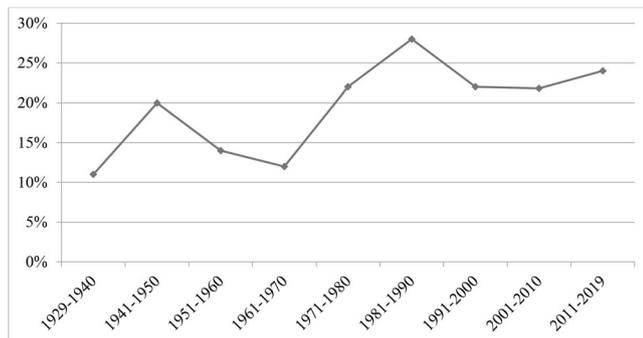
Table 1. (continued)

Year of nomination	Winner	Title	Director	Cast	Medical references
1977	Not	Taxi Driver	Martin Scorsese	Robert De Niro	Epilepsy
1978	Yes	Annie Hall	Woody Allen	Woody Allen	Chronic insomnia
1979	Yes	The Deer Hunter	Micheal Cimino	Robert De Niro	Necroses
1980	Not	All That Jazz	Bob Fosse	Roy Scheider	Post-traumatic stress disorder
1981	Yes	Ordinary People	Robert Redford	Jessica Lange Donald Sutherland	Coronary artery disease
1981	Not	The Elephant Man	David Lynch	Timothy Hutton John Hurt	Post-traumatic stress disorder
1982	Not	On Golden Pond	Mark Rydell	Anthony Hopkins Katharine Hepburn	Protheus syndrome
1983	Not	The Verdict	Sidney Lumet	Henry Fonda Paul Newman	Amnusias
1983	Not	Tootsie	Sydney Pollack	Dustin Hoffman Jessica Lange	Medical malpractice
1984	Yes	Terms of Endearment	James L. Brooks	Shirley MacLaine Debra Winger	Depression
1984	Not	Tender Mercies	Bruce Beresford	Robert Duvall Tess Harper	Alcohol addiction
1985	Yes	Amadeus	Milos Forman	Tom Hulce F. Murray Abraham	Depression
1986	Yes	Out of Africa	Sydney Pollack	Meryl Streep Robert Redford	Alcohol addiction
1987	Not	Children of a Lesser God	Randa Haines	William Hurt Marlee Matlin	Syphilis
1989	Yes	Rain Man	Barry Levinson	Dustin Hoffman Tom Cruise	Deaf-mutism
1990	Yes	Driving Miss Daisy	Bruce Beresford	Jessica Tandy Morgan Freeman	Savant syndrome
1990	Not	Born on the Fourth of July	Oliver Stone	Tom Cruise	Senile dementia
1990	Not	My Left Foot	Jim Sheridan	Daniel Day Lewis	Post-traumatic paraparesis
1991	Not	Awakenings	Penny Marshall	Robert De Niro Robin Williams	Alcohol addiction
1992	Not	The Prince of Tides	Barbra Streisand	Nick Nolte Barbra Streisand	Cerebral palsy
1994	Not	The Piano	Jean Campion	Holly Hunter	Letargia due to epidemic encephalitis
1995	Yes	Forrest Gump	Robert Zemeckis	Tom Hanks	Chronic depression
1995	Not	Four Weddings and a Funeral	Mike Newell	Hugh Grant	Dissociative state
1997	Yes	The English Patient	Anthony Mingella	Ralph Fiennes Juliette Binoche	Mutism
1997	Not	Shine	Scott Hicks	Geoffrey Rush	Curve spine
1998	Not	As Good as It Gets	James L. Brooks	Jack Nicholson Helen Hunt	Marginal intelligence
2000	Not	The Sixth Sense	M. Night Shyamalan	Bruce Willis	Deaf-mutism
2000	Not	The Green Mile	Frank Darabont	Tom Hanks David Morse	Euthanasia
2000	Not	The Cider House Rules	Lasse Hallström	Tobey Maguire Charlize Theron	Manic syndrome
2001	Not	Chocolat	Lasse Hallström	Juliette Binoche Johnny Depp	Schizophrenia
2001	Not	Erin Brockovich	Steven Soderbergh	Julia Roberts	Obsessive-compulsive disorder
2002	Yes	A Beautiful Mind	Ron Howard	Russell Crowe	Environmental pollution and risk of cancer
2002	Not	Moulin Rouge!	Baz Luhrmann	Nicole Kidman	Schizophrenia
2003	Not	The Mours	Stephen Daldry	Nicole Kidman	Tuberculosis
2005	Yes	Million Dollar Baby	Clint Eastwood	Clint Eastwood Hilary Swank	Bipolar disorder
2005	Not	Finding Neverland	Marc Forster	Johnny Depp Kate Winslet	Uterine fibroma
2005	Not	The Aviator	Martin Scorsese	Leonardo Di Caprio	Post-traumatic paralysis
2005	Not	Ray	Taylor Hackford	Jamie Foxx	Euthanasia
2007	Not	Babel	Alejandro González Iñárritu	Brad Pitt Cate Blanchet	Tuberculosis/lung cancer
2007	Not	Little Miss Sunshine	Jonathan Dayton Valerie Faris	Koji Yakusho Greg Kinnear	Obsessive-compulsive disorder
2010	Not	Precious	Lee Daniels	Toni Collette Alan Arkin	Blindness
				Gabourey Sidibe	Opioid addiction
					Deaf-mutism
					Obesity

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Table 1. (continued)

Year of nomination	Winner	Title	Director	Cast	Medical references
2011	Yes	The King's Speech	Tom Hooper	Colin Firth Geoffrey Rush	HIV Down syndrome Stutter
2011	Not	Black Swan	Darren Aronofsky	Natalie Portman Vincent Cassel	Self-harm
2011	Not	The Fighter	David O. Russell	Mark Wahlberg Christian Bale	Drug addiction
2011	Not	Winter's Bone	Debra Granik	Jennifer Lawrence	Depression
2012	Not	The Descendants	Alexander Payne	George Clooney	Coma
2013	Not	Silver Lining Playbook	David O. Russell	Bradley Cooper	Bipolar disorder
2013	Not	Beasts of the Southern Wild	Benh Zeitlin	Quvenzhané Wallis Dwight Henry	Undefined heart disease
2013	Not	Amour	Michael Haneke	Jean Louis Trintignant Emmanuelle Riva	Stroke Carotid artery stenosis
2014	Not	Dallas Buyers Club	Jean Marc Vallée	Matthew McConaughey	HIV AIDS
2014	Not	The Theory of Everything	James Marsh	Eddie Redmaine	Amyotrophic lateral sclerosis
2014	Not	The Wolf of Wall Street	Martin Scorsese	Leonardo Di Caprio	Drug addiction
2014	Not	Philomena	Stephen Frears	Judi Dench Steve Coogan	AIDS
2014	Not	Nebraska	Alexander Payne	Bruce Dern Will Forte	Alcohol addiction
2017	Yes	Moonlight	Barry Jenkins	Trevante Rhodes	Opioid addiction
2017	Not	Manchester by the Sea	Kenneth Lonergan	Janelle Monàe Casey Affleck Michelle Williams	Alcohol addiction
2018	Yes	The Shape of Water	Guillermo del Toro	Sally Hawkins	Mutism
2018	Not	Three Billboards Outside Ebbing, Missouri	Martin McDonagh	Frances McDormand Woody Harrelson	Pancreatic cancer
2018	Not	Phantom Thread	Paul Thomas Anderson	Daniel Day Lewis Vicky Krieps	Mushroom poisoning
2019	Not	A Star is Born	Bradley Cooper	Bradley Cooper Lady Gaga	Tinnitus



**Figure 1** Percentage of films with reference to medicine during the different decades. The figure shows the percentage of films referring to medicine, calculated as: (number films with medicine references / number films which received nomination to “Oscar for Best Picture”) × 100.

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**Compliance with Ethical Standards:**

**Conflict of Interest:** The authors declare that they do not have a conflict of interest.

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